Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

Published by McGraw-Hill Company, Inc.

MORRIS BUCK, *Managing Editor*

Volume 66 New York, Saturday, July 18, 1925 *Number* 3

Standardizing Car Design Without Sacrificing Modernization

THAT an individual railway should adopt a standard car design and adhere to it over a five-year period, changing at the end of that time to a new standard, is the suggestion made by an engineer well known in the industry. According to his plan, cars would be designed to have a life of approximately ten years. At the end of that time they would be scrapped. The design adopted today would remain standard for the next five years; then a new standard would be adopted for the succeeding five-year period. Thus, there would be only two types of cars on the property at any one time—old style and new style.

Undoubtedly, this plan has certain advantages. To some extent, the advantages of standardization and of modernization would be combined. A good many improvements in design might be made during the five years when the company was adhering rigidly to its standard. These improvements, however, could all be incorporated in the new standard at the end of that time. Meanwhile, the company would have had the advantage of standardized equipment, although perhaps not in every respect the most modern equipment. Essential to the success of any such scheme is the proviso that the cars be retired from service at the end of ten years. If they were allowed to continue in use longer than that, a third standard would come into being and the whole plan be upset.

Adoption of new designs from time to time is necessary if the electric railway industry is to progress. Where orders are placed at frequent intervals, some railway engineers are likely to feel that improvements should be included in each order instead of maintaining the old design till the five-year period has passed. Whether the resultant advantages to the individual road would be as great as those obtained from standardization may be open to discussion. But in any case, general progress would hardly be interfered with by the proposed plan. Even if it were adopted by a large number of companies, their five-year periods would overlap in such a way that new cars of new design would be in demand at short intervals.

Training of Welders Needs More Attention

POST-MORTEM examination of welds which have failed in service is an unsatisfactory method for determining welding results. Neither is it desirable to break up work that has every appearance of being well made in order to test the welds. Careful training of welders and a thorough inspection of the finished product should be a sufficient assurance that satisfactory work will be produced, without the necessity of break down tests. Welding is one of the most important processes used by electric railways and many jobs are done repeatedly. Certainly careful instruction is not very expensive. The saving from more satisfactory work will many times repay the cost of training, supervising and inspecting.

On most railways a man becomes a welder in essentially the same manner as he becomes a blacksmith or machinist. In the majority of cases less attention is paid to his training. He is probably assigned to the welding gang and helps other operators until he is deemed competent to carry out a welding job alone. After that the responsibility for good work is left entirely to him.

Unquestionably it will pay in the long run to require all welders to pass certain practical and theoretical tests so as to insure sufficient skill in making welds and a proper understanding of the fundamentals of welding. Beyond that, adequate supervision should be given. The work of the average man in any skilled trade requires the corrective influence of more experienced and capable operators in order that he may develop along safe lines. It also will forestall the trying of methods which have already proved unsatisfactory. The appointment of a supervisor will also prove of value to the railway in that he can be expected to follow new developments and obtain the best type of welding materials.

Still another factor in producing more satisfactory welding work is careful visual inspection of finished jobs. The final appearance of a weld will tell an expert welder a great deal. Searching tests of actual welding work may be desirable as an aid to the improvement of welding practice. In most cases, however, tests can be carried out with most beneficial results if conducted by engineers and experts in the welding art.

Arbitration Under the Old Plan at Boston

ONE surprise has followed another as the situation has developed in the Boston Elevated Railway labor case. One thing is certain—there will be no strike. The Governor nipped that possibility in the bud in his statement that in the event of a strike the men would stand convicted as disloyal public servants who had been tried and found wanting. In brief, he read the riot act to them. There was general agreement with him on the stand he took in this respect. At the very time he did this the Governor said he would remove every one of the trustees willing to permit a strike. There wasn't general agreement with him on this. It wasn't that the public or the press or the trustees wanted a strike. That was the last thing they wanted. But all three, to put it bluntly, were sick and tired of trying to carry on under a plan of arbitration which has prevented an able management from getting anywhere with its work by stripping the property of its surplus just as soon as there was any.

This is the issue in July that is devoted essentially to maintenance subjects

Theoretically, it may be said that a very good case can be made out for arbitration under the old plan. Practically, however, that method has not been found to meet the present need adequately. As the Governor by his attitude has closed the way for the present to any modification of the plan to which resort was made previously, the problem now becomes one of fixing wages and working conditions under that plan.

The issue which has just been settled and incidentally resulted in the retirement of James F. Jackson as chairman of the board of public trustees was solely one of a proposal on the part of the public trustees of the Elevated to arbitrate whether a change in the arbitration agreement between the company and its unionized employees can be made. The trustees desired, in the public interest, to substitute a plan which would end deadlocks over arbitration, and they proposed that the third arbitrator should be selected either by the Governor or other representative of the Commonwealth instead of by the two arbitrators. They recognized, moreover, that the men had the legal right to reject this proposal, but they did not believe the men had either the legal or the moral right to say that a change in the method of arbitration is not an arbitrable question. This is what the carmen's union did say when it reported its strike vote of 4,950 to 197, and this notwithstanding the clause in the existing arbitration agreement which provides "upon failure to reach a mutual agreement upon any of the changes desired by the parties hereto the same shall be arbitrated as provided for in this agreement."

The Governor's action has forced the trustees to accept conditions with which they are not in accord—conditions with which the public is not in accord as expressed in the public press. The Boston *Transcript* put the situation forcefully in its issue of July 16 when it said that there would have been no break in the ranks of the trustees if Governor Fuller had given his support at a time when they were making an honest effort to protect the interests of the public against the despotic demands of the carmen's union. Had the trustees been so disposed they could have followed the path of least resistance, for as a matter of fact neither the management of the road nor the stockholders are affected in the least under the plan that guarantees the stockholders their return and passes the burden of the cost of operating the property to the public by exacting that cost in fares. There is one thing about it, the public discussion of the matter ought to have a chastening effect upon the third arbitrator soon to be selected—for he has certainly had brought home to him forcefully the uncompromising attitude of the union and the reaction of the public to the matter of the continued domination of the road by organized labor.

Twin City Decision Disappointing to Company

WHILE Minneapolis and St. Paul are to have an 8-cent cash fare, still the regular rider can continue to use the service for 6 cents because the decision of the Railroad and Warehouse Commission fixes the token rate at ten for 60 cents. In this respect the commission is looked upon as having straddled the issue. From the standpoint of the railway the change is not regarded as affording anything like the relief to which it is entitled. In consequence it has asked the federal court to set a rate of fare effective Aug. 1. The company is at odds with the commission both on the rate of return allowed and on the valuation. The determination of these matters is fundamental. The company must feel sure of its grounds; otherwise it never would have appealed the case.

Entirely aside from the probable adequacy of the rates fixed by the commission, certain points in the decision are of wide interest. The commission attributes the continued decrease in car riders to the increase in the use of the private automobile. It says, in short, that the revolution in transportation brought about by the automobile calls for new adjustments in the form of relief to the carrier from impositions in the shape of service demands, taxes, paving requirements and other special assessments.

Of course, the commission is powerless to remove restrictions that hamper the company, but it was not powerless to fix a rate that would take these things into account. While that body said in effect that it is the public that pays, it apparently was loath to make the public pay. Instead of settling the matter by its finding the commission appears to have complicated the issue. So far as the company is concerned it probably would be better pleased with a reduction in the imposts it bears than with an award of a higher fare. Lacking the first, it must have the second in order to carry on successfully.

Rockford Would Load Down Its Railway

ELECTRIC railway operation at Rockford, Ill., may be strangled to death artificially by legislation and punitive taxation wielded by people unacquainted with fundamentals. In some respects this is an old story. The City Council of Rockford, Ill., recently voted a new franchise to the Rockford City Traction Company. This measure prohibits operation of one-man cars. It assesses track paving costs against the utility. It assesses one-third of the cost of all new bridges against the railway. It requires the use of grooved rails in all new construction and prohibits the company from taking advantage of any terminable franchise legislation that may be enacted by the Legislature. It is a staggering load that is sought to be imposed.

In every such situation as this the people are the greatest losers. The investor loses once and gets out. The car rider continues to lose as long as he must use transportation service. Despite this it is difficult to get the people interested in the issue of a square deal for the railway. The problem is to make the public understand that they pay the cost of destructive policies. It is self-evident that no business can be conducted permanently at a loss. Every intelligent man can easily understand that. The trouble with a great many people is that they do not understand that it is difficult to secure new capital for improvements. When the politician rides the old hobby of soaking the railway he builds his unwholesome career out of the time, comfort and pocketbooks of the public. Where a politically crippled property is put back into proper shape to function efficiently it is the public that pays. It may well be that the framers of this ordinance at Rockford were sincerely working in what they believed to be the best interests of the citizens. It goes without saying, however, that the city fathers have lost sight of the fact that the car riders will carry this artificially imposed load, either in the form of curtailed service or higher fares—assuming, of course, that the company decides it is worth while to try to continue the struggle.

Sandblasting Proves an Economical Method of Cleaning

Equipment Parts, Such as Controller Drums, Arc Chutes, Finger Blocks, Connection Boards, Circuit Breaker Parts, Brush-Holders, Commutators, Bearings and the Like Are Cleaned in the Shops of the Third Avenue Railway, New York, by This Process in Less than One-Tenth the Time Required by Other Cleaning Methods

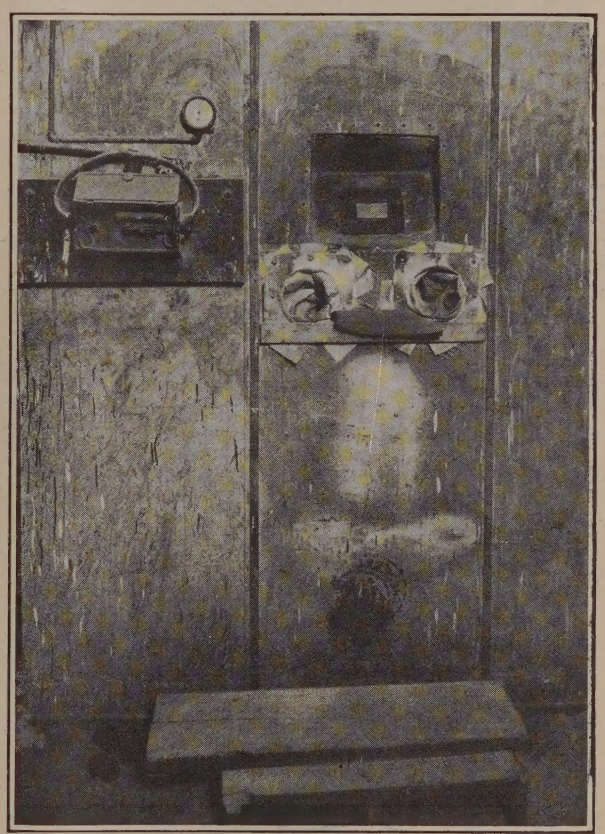
ORDINARILY, in making maintenance repairs to equipment parts, much time is consumed in cleaning and getting ready for making repairs. Railway motor and controller parts in particular accumulate considerable quantities of dirt, carbonization and blisters, due to arcing and burning, which are very difficult to remove. The scraping, filing and grinding methods commonly used consume considerable time and are very tedious operations, so that they are sometimes slighted by the workmen. Cleaning of railway equipment parts has been most satisfactorily and economically handled in the 65th Street shops of the Third Avenue Railway, New York City, by means of sandblasting. A section of the shop 10 ft. square by 15 ft. high has been partitioned off for this work. This room is directly underneath the section used for drying sand. Thus the sand needed is not only easily accessible but the necessary small quantities used can be shoveled directly into a hopper to be fed to the sandblasting equipment without unnecessary labor or expense.

The equipment required for an efficient sandblasting section is very simple and inexpensive. The principal parts are a hopper to receive the sand; a spout and piping for conveying the sand to the point where the sandblasting operation is done, and for furnishing necessary air pressure; valves for regulating the supply and pressure; a table or bench for convenience of the operator in handling various equipment parts; a second hopper for receiving the sand after use and directing it to a point where a conveyor or elevator can return it to the first hopper for reuse. This equipment must be housed or partitioned off from the other sections, so that the dust and dirt from the sandblasting operation are confined and kept from the operator and other workmen.

In the Third Avenue shop the sandblasting operation itself is done in the inclosed compartment, but the operator remains outside. The compartment is partitioned off through the use of sheet steel with necessary reinforcing angles to provide a permanent construction. The front of this section has a window through which the sandblasting operation can be directed by the operator. As his hands and arms alone are necessary for regulating the sand blast and moving the various parts into position for cleaning, holes are provided for their insertion immediately below this window.

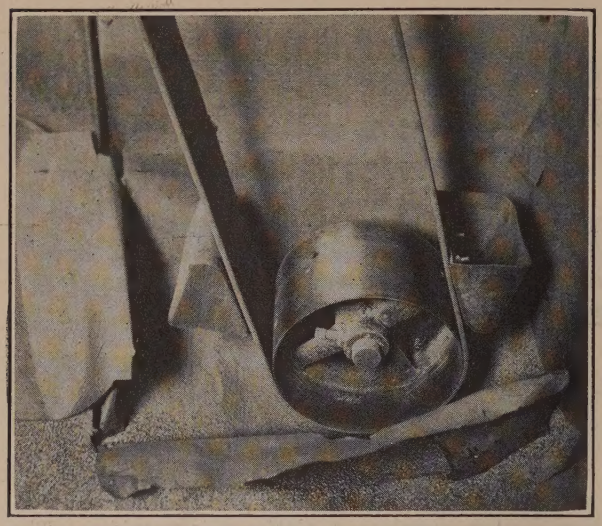
In order to keep the sand from coming out of the openings, canvas sleeves are fastened to the partition by sheet steel plates. The cuffs are only large enough to allow the insertion of the operator's hands. A layer of felt inside the cuffs make the sleeves tight about the operator's wrists. During the sandblasting operation the operator also wears rubber gloves. The particles of sand seem to cushion on this without any wearing-off effect, so that rubber gloves last for months before they are worn through. Canvas provides more resistance to the sand particles and as a result the wearing away is faster.

The holes for the operator's arm are located the correct distance above the floor for a rather tall man. For shorter operators a platform is provided. This can be adjusted to the height of the individual who is using the equipment. When sandblasting, the operator usually leans against the partition. In order to provide a soft support, a felt pad covers the partition just between and below the two openings for the arms. The window through which the operator looks is tilted, so that he can look down upon his work. The top part is set in about 8 in., placing the window at an angle as shown in the illustration. The depressed section is 15 in. square. Experience has shown that the glass



Front of the Sandblasting Compartment

The window through which the operator directs his work and the openings for arms are in the center. At the left is a switch, fuse and air gage used for operating the equipment.



Interior of Lower Hopper Showing Belt Conveyor and Lower Pulley

through which the operator looks should be only a small amount wider than the distance between the operator's eyes. In the Third Avenue shop the glass window is but 5 in. wide by 2 in. high. Light comes through a window inside the sandblasting compartment, so that the work is well illuminated. The small window screens the operator from any extraneous light. Also, the small glass is cleaned much easier than a large one. Cleaning is necessary at frequent intervals, as the dust from the sandblasting soon covers it.

In the illustration showing the front of the sandblasting compartment a fuse, switch and air gage will be seen at the left. The fuse and switch are in circuit with a motor for operating the conveyor, while the gage indicates the air pressure which is being used. This equipment is placed convenient to the operator. In the Third Avenue shops an air pressure ranging from 70 to 85 lb. has been found most satisfactory. The air used is obtained from the shop air supply, which is furnished by a large shop air compressor. Originally the plan was tried of having tanks and an additional compressor, so as to separate the sandblasting equipment entirely from the shop system. No advantage was found, and so connection has been made to the shop air supply.

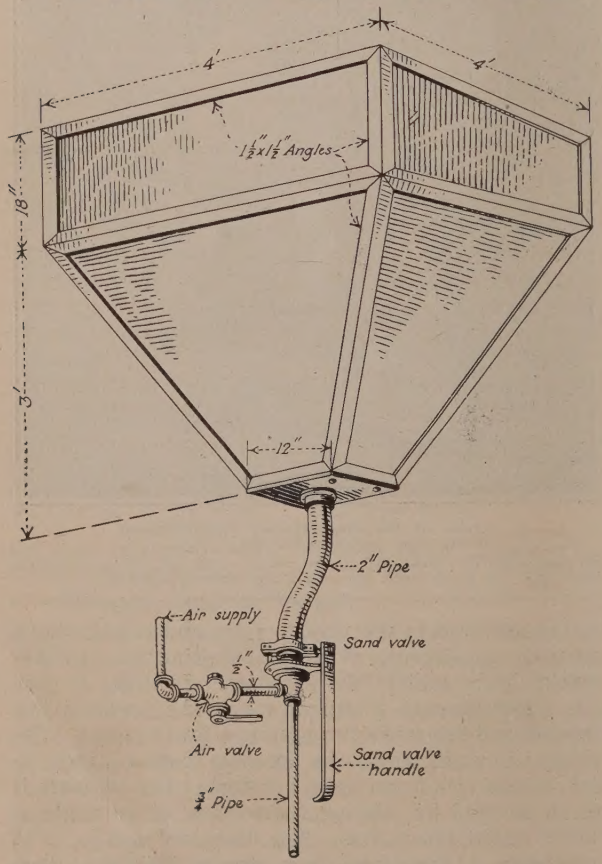


Diagram of Hopper and Piping for Sandblasting Operations

An ordinary belt conveyor with metal buckets is used for carrying the sand from the lower hopper to the upper. This conveyor is belt-driven from an old 500-volt railway motor. The potential across the motor terminals is reduced by inserting several frames of grid resistance in series. With this arrangement, the motor and resistance can be thrown directly across the line and the circuit can be opened at the switch without serious arcing. As the speed of the motor is necessarily slow, this has proved quite satisfactory.

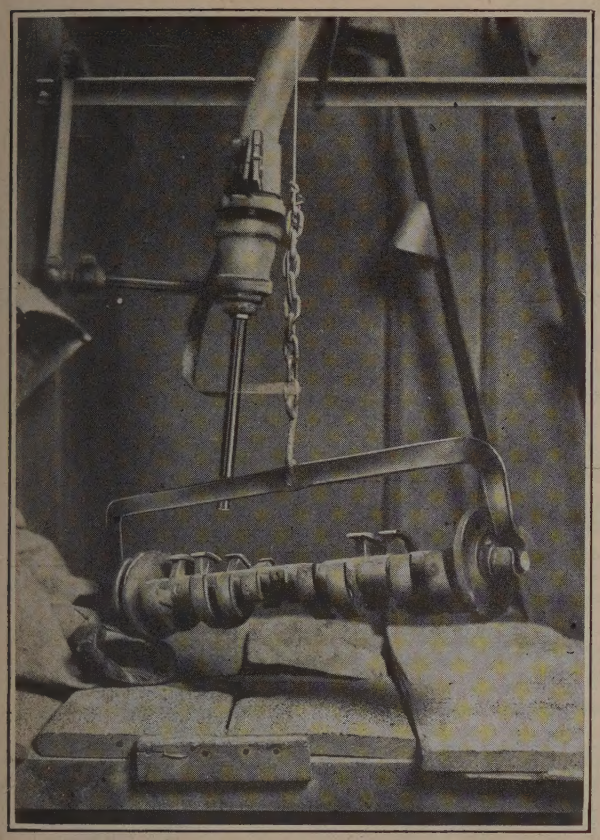
Construction of Sandblasting Equipment

The upper hopper, into which the sand supply for blasting is conducted, is 4 ft. square at the top and 4 ft. 6 in. high. Beginning 1 ft. 6 in. from the top, the hopper slopes toward the bottom, which is 12 in. square. The hopper is constructed of galvanized steel, reinforced at the corners with 1½-in. x 1½-in. angles. A plate covers the bottom, and to this is fastened a standard 2-in. pipe flange. The sand passes from the hopper through a 2-in. pipe to the regulating valve. This valve consists of a steel plate pivoted at one end and connected to a handle at the other, as shown in the line drawing. The handle hangs down so that by moving it back and forth the sheet-iron slide is pushed across the bottom opening of the pipe.

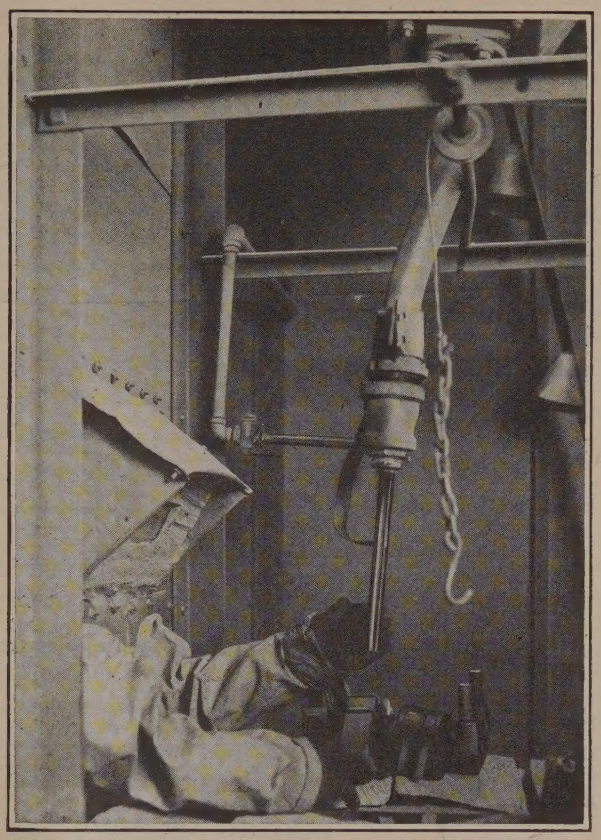
From the valve, the sand drops into a 2-in. x 1½-in. x 1½-in. tee, with the 2-in. opening on top. The bottom part has pipe bushing reducers for attaching a ¾-in. pipe, which is used as a nozzle. The side connection of the tee is bushed to connect with a ½-in. pipe for the compressed air supply. A shut-off valve is provided in the air line convenient to the operator. Inside the tee the air pipe is reduced to ¼ in. This small pipe is bent down so as to end just above the top of the ¾-in. pipe through which the sand passes. In operation the air pressure forces the sand which falls into the tee when the sand valve is open through the ¾-in. pipe against the work.

The bench which supports the work during the sandblasting is about 18 in. below the end of the sandblasting nozzle. This bench is constructed of 2-in. planking on an angle framework. It has a 15-in. opening directly underneath the sand pipe. This is beveled at the edges, so that after the sand is used it falls through to an incline, where it goes by gravity to the bottom hopper.

The operator has found that time can be saved by having a second shelf below the bench on which small parts such as brush-holders, bearings, etc., are placed. Whenever the force of the blast directed on parts which are being sandblasted is not exhausted the supply is forced through the opening and is directed against the parts placed on the lower shelf, helping to clean them.



Controller Drums Are Supported During Sandblasting by the Yoke Shown



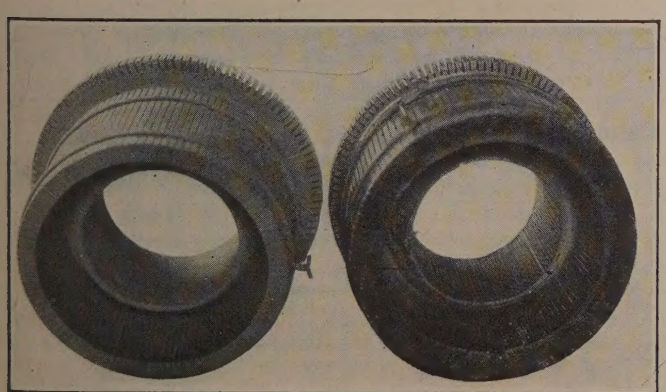
Equipment Inside the Sandblasting Compartment. Brush-Holders Are Being Cleaned

Where small parts are being sandblasted, a dozen or more are placed on the top of the bench convenient to the operator. He can finish all of these at one operation before replenishing his supply. Material is carried through a sliding door at one side of the sandblasting room. Special tackle is used for supporting larger parts, such as commutators and controller drums.

The fixture used for supporting a controller drum is shown in an accompanying illustration. This is a sheet-steel yoke with hooked ends. The shaft of the controller drum to be sandblasted is held in it so that it can be rotated. The center of the yoke has an eye so that it can be hooked to an overhead support consisting of a short chain with a rope passing over two pulleys. The other end has a counterweight, so that the controller drum and tackle are supported without effort from the workman. The controller drum can be rotated or moved to any position needed for the sandblasting operation.

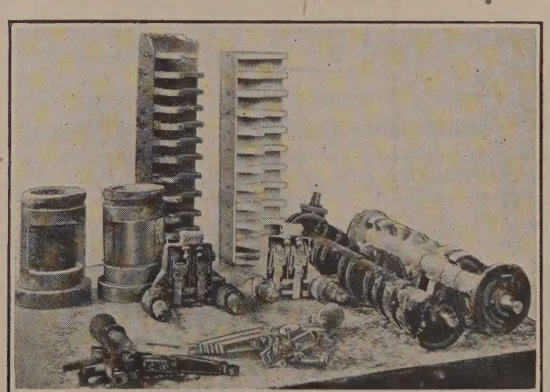
A partition in the lower hopper prevents excess sand accumulating underneath the lower end of the belt conveyor. This partition has a small opening, 10 in. x 6 in., the top of which is below the bottom of the pulley, around which the belt conveyor passes. The sand thus never piles up higher than the bottom of the conveyor pulley. Without this arrangement, the supply sometimes would reach such a height as to stop the conveyor entirely.

Some of the equipment parts which are sandblasted in the shops of the Third Avenue Railway are con-



Commutators Arranged for Sandblasting

The one at the left has been cleaned, while the one at the right is ready for cleaning. Copper wire bands hold the segments in place during handling and sandblasting.



Equipment Parts Which Are Cleaned by Sandblasting

Two parts of each type are shown. The part at the left in each case has not been cleaned, while the corresponding part at the right has been sandblasted.

Inspection and Shop Report Forms for Troubles and Repairs

DAILY INSPECTION AND REPAIR REPORT

Saturday DAY May 9th 1925

CARS	Time Worked From	Time Worked To	PARTS INSPECTED AND MATERIAL USED	CLASSIFICATION
63	7 00	8 00	Adjusting + greasing controller	
			Inspecting lights motor leads. brakes	
			push buttons. + oiling trolleys	
67	8 00	9 00	Same as above	
64	9 00	10 00	" " "	
200	10 00	11 00	" " "	
202	11 10	11 55	" " "	
	11 55	12 00	Issuing tickets to employees	

APPROVED _____ Foreman SIGNED Wm F. Buckheister Workman

1

1. Daily inspection and repair report, Form R-17.
2. Daily shop report, Form R-46.
3. Trainman's car report, Form R-45.
4. Report of car replacements, Form R-6.
5. Trouble, inspection and repair report, Form R-9.
6. Monthly rolling stock report.

SHOPMAN'S CAR REPORT

DAILY INSPECTION CARD

Car No. _____ Chas. Consd. Ry. & Ltg. Co.

PART	SIGNED	SIGNED	SIGNED	SIGNED	SIGNED
Lights, car & head					
Register					
Buzzer					
Signal					
Destination Signs					
Air Pressure					
Controllers					
Brakes					
Sanders					
Swept					
Glasses					
Miscellaneous					

2

Trainman's Car Report

CHAS. CONSD. RY. & LTG. CO.

CAR No. _____ LINE _____ DATE _____

PART	CONDITION
Brakes	
Squealing Journal	
Register	
Signals	
Controller	
Glass	
Heaters	
Motorman's Valve	
Circuit Breakers	
Lights	
Misc	

Remarks: _____

Signed: Motorman _____ Operator _____

R. 45—10M—1-25 D. P. Co. 99657

3

Form R-6-2M.—9-25 D. P. Co. 99726

CAR CHANGE REPORT

Line _____ Date _____

Car _____ Replaced by Car _____ Time _____

Condr _____

Changed by _____

Why Changed _____

4

10M-FORM R 9 1-25 QUIN

Charleston Consolidated Rwy. & Ltg. Co.

Report of Trouble, Inspection and Repairs

Time received _____ M _____ Date _____

Car No. _____ Due _____

Reported by _____ M

Trouble reported _____

Investigation _____

Materials used _____

Apparatus inspected and repaired is in good order.

Time _____ M _____ Date _____

Signed _____

This form to be filled out for each car reported for trouble

5

6 Maintenance Rolling Stock Monthly Labor Distribution Month of ____ 19____

Car No	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	TOTAL
46		3.25	4.95	13.55	7.40	14.95	2.70		3.15	15.40	75			5.30	5.55	9.80	1.75	8.55	9.80	1.75	8.55	8.55										119 20
49																																
62																																
63																																
64																																
65																																
66																																
67																																
68																																
69																																
70																																
72			7.00					6.55			5.40	.90					1.10							1.25				.90				23 10
73																																
74																																
75																																
76																																

Figures show Period of Overhauling

Pull Ins and the Expense of Repairs

6

troller drums, arc chutes, finger blocks, connection boards, circuit-breaker parts, brush-holders, commutators and bearings. The economies from this method of cleaning are quite pronounced. Commutators, which took a man one-half day to clean by previous methods, are now cleaned by sandblasting in approximately five minutes. Controller drums are sandblasted in about three minutes, brush-holders and bearings in about two minutes. The cleaning is also much more thorough by the sandblasting method. It has been found that the babbitt for bearings sticks to the sandblasted surface better than to surfaces prepared by wiping and scraping. If a part has a considerable accumulation of grease, this should be removed before the sandblasting operation. Thick accumulations are not removed readily by the sandblast, as the grease seems to offer a cushion and reduces the force of the sand as it strikes the part being cleaned. A thin coating of oil or grease, however, is removed readily and much more effectively than by wiping. Insulation on parts which might be damaged by sandblasting is covered by a layer of tape during the operation. An accompanying illustration shows two brush-holders with the insulators taped.

In the shops of the Third Avenue Railway in New York piecework prices have been established for the sandblasting of parts which are done most frequently. Some of these prices are: Average size commutators, 10 cents each; controller drums, 8 cents; controller arc deflectors, complete, 8 cents; controller covers, 8 cents; controller connection boards, complete, 8 cents; brush-holders, 2 cents; armature bearings, 1 cent; axle bearings (two halves), 1 cent.

Improved Account Classification Reduces Maintenance Costs

The Division of Time Between Repairs and Inspection May Lead to Improper Charges—Handy Forms for Reporting Defects and Work Done Show Where Economies Can Best Be Made

BY HORATIO BIGELOW
Superintendent Railway Department, Charleston Consolidated Railway & Lighting Company, Charleston, S. C.

CAN maintenance saving be effected by an improved classification of accounts? is a question which has led to considerable discussion and investigation by officials of the Charleston Consolidated Railway & Lighting Company. The auditor maintained that some of the time charged to maintenance of cars (account No. 30) should be charged to carhouse employees (account No. 70), since the men who charge their time to the maintenance of cars account spend several hours each day in inspection work. A preliminary investigation showed that this time, which was considered as improperly classified, amounted to $3,000 per year. When this amount was taken from the maintenance of cars account and added to the carhouse employee account, attention was naturally focused on the latter in an endeavor to reduce this as much as possible. It was found possible to dispense with a car cleaner and by rearranging the duties of two other employees to take care of work regularly assigned to a controller inspector. This reduction in force led to an annual saving of $1,601.60.

Investigation of other factors in connection with inspection work led to further economies. The inspection routine conformed to the miscellaneous methods and practice as recommended by the committee on equipment of the American Electric Railway Engineering Association in 1924. In order to follow out this procedure it was found advisable to use certain inspection forms. These were originated by the railway in order definitely to place the responsibility for car failures. The forms now used by the railway are shown in the accompanying illustration. Forms for reporting trouble, inspection and repairs (R-9) and car change report (R-6) were already in use by the railway. A trainman's car report (R-45) was added, so that a motorman or operator upon completing his run can fill it out and turn it in, giving the car number, line and date. If trouble occurs in service, this is checked under the various headings for trouble. If there is no trouble, the report is signed O.K. under "Remarks." The trainman also signs the report at the bottom and gives his badge number.

SHOPMAN'S CAR REPORT PLACES RESPONSIBILITY FOR FAILURES

In order to place responsibility for car failures the form of shopman's car report (R-46) was originated, together with a daily inspection and repair report (R-17). The shopman's car report has a space for the car number at the top, and opposite the various parts is a column for the class of inspection made and an additional column which is signed by the inspector. The daily inspection and repair report has a column for the car number, two columns giving the time at which work was started and completed, and space for listing the parts inspected and the material used.

This information is tabulated on a monthly labor cost distribution sheet, which has been found of particular assistance in determining the number of men required in the shops and inspection department to maintain cars economically. The monthly labor cost distribution form gives comparative figures on the cost of maintaining different types of equipment. When taken in connection with the pull-in record it enables the officials to prevent a recurrence of many classes of defects.

It is believed that the pull-in record serves as a balance wheel to prevent skimping in items of fundamental upkeep when striving to reduce the cost of maintenance of cars and car equipment. Numerous pull-ins and low maintenance costs merely mean that the expenditures for maintenance are being deferred. Where pull-ins are few and the maintenance costs are high, it is evident that more expense has been incurred than is warranted in order to cut down the pull-in record. Certain limits in maintenance costs can be determined, below which excessive trouble is found to result.

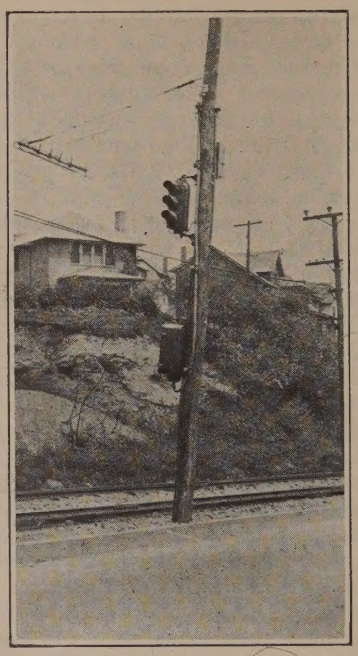
In Charleston, careful reorganization reduced the shop force from 65 men on July 1, 1923, to 40 men on July 1, 1924. At the beginning of this year a minimum of 38 men was reached, and this was considered as the lowest that could be maintained. However, by carefully checking the way that the different men's times were charged and through the use of pull-in records and maintenance cost records, the force on June 1, 1925, was brought down to 35 men. During this same period the mileage per pull-in nearly doubled. At present, the railway has one employee in the shop on inspection and overhauling for every 39,000 passenger car-miles, while in July, 1923, the company had one employee for every 22,000 passenger car-miles.

Spacing Signals Used on Steep Grades

Three-Indication Signals Are Used by Pittsburgh Railways to Insure Safe Operation on Line Carrying Heavy Traffic

BETWEEN Wilkinsburg and East Pittsburgh there are steep grades on the Ardmore line of the Pittsburgh Railways. This line carries heavy traffic during the rush hours to and from the plant of the Westinghouse Electric & Manufacturing Company at East Pittsburgh, and headways are short. Because fogs are rather prevalent in the valley at the foot of the hill spacing signals have been installed by the railway to protect operation on the down grades.

The signals used are of the three-indication type as shown in the accompanying illustration. They are spaced approximately 700 ft. apart. Lenses are red, amber and green. The wiring of this signal system is shown in the accompanying diagram.



Three-Indication Signals Are Used for Spacing Cars on the Steep Grades Outside of Pittsburgh

Colored Lights Give Home and Distant Indications

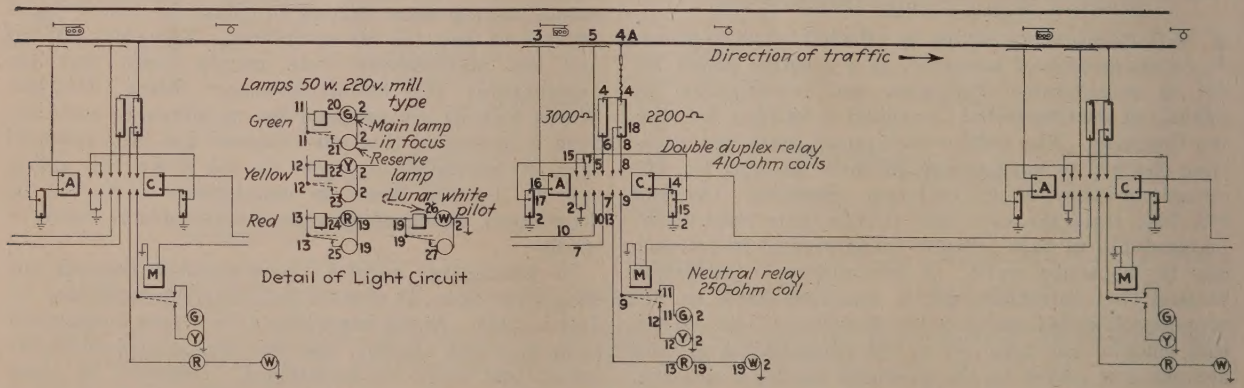
The green light shows normally. A motorman passing the contactor at the green signal throws this signal to red to protect his rear, and a lunar white pilot comes up two poles ahead to show that the red is displayed in the rear and that his car is protected. As the car goes into the next block, the first signal changes to yellow, and as it continues into the second block ahead the signal changes back to green again, and remains at green for all further movements of the first car. Each signal passes through this cycle of changes. A green light, therefore, means the track is clear for at least two blocks ahead. A yellow indication shows that the block is clear, but the one ahead is occupied. Red means the block is occupied. A car may pass signals at green, in which case it will be following two or more blocks behind another car, or it may pass signals at yellow following one block behind the car ahead, but it must not pass a signal at red. Then two cars would be in a block at once and, there being no counting relay in the signal, the first one out would clear the signal, leaving the car in the block without protection.

The great advantage of the three-indication signal is that the motorman does not unexpectedly come upon a red light and be forced to make a sudden stop, but he is always prepared for it by the previous signal having been at yellow.

The clearing contactor for the block in the rear is overlapped one span from the next setting contactor; that is, the car sets the next block to red one span before it clears the red in the rear, and incidentally the car is protected by two reds in passing the overlap. This overlap permits the incorporation of a safety feature, whereby if the car fails to set the signal and obtain rear protection in the block it is about to enter it cannot clear or remove the rear protection it already has.

Each lens has two lamps behind it. One is in focus and burns when the indication is to be given, and the other is a spare lamp in the rear, which is automatically cut into circuit by a reserve lamp relay if the first lamp burns out. By inspecting the signals twice a month and renewing lamps for the indications in which the reserve lamp is burning dark signals are practically avoided. Motormen are instructed to report a dark signal or any failure to obtain a lunar white pilot when passing the signal at green or yellow. Such a failure shows that either the relay was not thrown or that both lamps of the red signal or the pilot in series therewith are burned out.

The signal indications are obtained through the use of two chief relays, the triplex relay *A-C* and the neutral relay *M*. The former selects between the red branch and the green-yellow branch, the latter between the green and the yellow, and is controlled from the *A-C* relay of the signal in advance. Thus but one indication can show for any position of the relays. The signals are made by the Nachod Signal Company. They have been installed on grades in both directions on the Ardmore line.



Schematic Diagram for Spacing Signals Used in Pittsburgh

Energy Saving Reduces Maintenance Costs in St. Louis

Electrical Equipment Maintenance and Brakeshoe Replacement Show Decided Reduction Following Installation of Economy Meters —Analysis of Cost Curves Shows Amount Creditable to Meters

By A. M. Brinkman
Chief Clerk Power Saving Department, United Railways of St. Louis

DURING the latter part of 1922 the United Railways Company of St. Louis installed power-saving meters on all of its passenger cars, after the thorough tests described in the Sept. 1, 1923, issue of ELECTRIC RAILWAY JOURNAL. Installation was completed in March, 1923, and during the years 1923 and 1924 the meters effected a net saving in energy amounting to 136 per cent on the total capital expense involved. This saving is calculated after all operating expenses have been deducted from the gross saving.

This direct saving in energy over a period of less than two years wipes out the entire cost of the meters, after deducting all operating and maintenance costs. In addition to this energy saving there has been a reduction in maintenance. This is due to better care being taken of the cars by the motormen through paying closer attention to proper operating methods. This saving is reflected in the lowered cost of electrical equipment maintenance and in reduced brakeshoe cost.

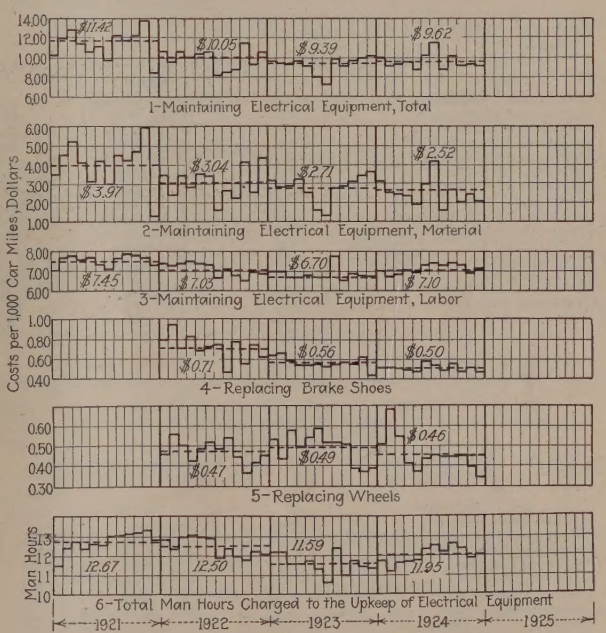
The accompanying charts show the cost per 1,000 car-miles of maintaining electrical equipment, brakeshoes and wheels for the four years 1921-1924. The total mileage of all passenger motor and trail cars, work cars, cars to and from shops, and all chartered cars of the United Railways and the Missouri Electric Railroad has been used in plotting these curves. Curve 1 shows the total cost of maintaining electrical equipment per 1,000 car-miles. The sudden decrease in December, 1921, was due to a credit adjustment of $7,800. In October, 1922, 300 new style trolley bases, costing $30 each, were replaced—hence the increase in the cost of equipment. The increase in August, 1923, was due to a strike of electrical workers. In July, 1924, field castings amounting to $5,000 were replaced.

The first six months of 1922 show a reduction of approximately 10 per cent from 1921. This was not due to the meters. The explanation is that in September, 1921, the cost of copper wire was lower than it had been for some time and at that time several months' supply was purchased.

MAINTENANCE COSTS REDUCED

Beginning with July, 1922, there has been a considerable reduction in maintenance cost. It is estimated that the last six months of 1922 show a saving of approximately 5 per cent over the first six months. This in all probability is due to the installation of the meters. Curves 2 and 3 show the material and the labor costs separately. A saving of 33 cents per 1,000 car-miles has been realized in 1923 over 1922, on both material and labor costs. This saving is substantial, especially when it is considered that there was an increase of 13 per cent in the cost of copper wire and a 2-cent per hour increase in the average wage of the electrical workers during 1923. Curve 4 shows the cost of replacing brakeshoes per 1,000 car-miles. This curve indicates a reduction of 15 cents per 1,000 car-miles in 1923 over 1922, and is attributable to greater coasting as the result of efforts on the part of motormen to save energy.

The total cost of maintaining electrical equipment



Attention to Energy Saving Has Produced a Material Reduction in the Cost of Electrical Equipment Maintenance and in Brakeshoe Cost

per 1,000 car-miles was $9.39 in 1923 against $10.05 in 1922. This shows a saving of 66 cents per 1,000 car-miles. Adding to this a saving of 15 cents per 1,000 car-miles in brakeshoes, there is a total saving of 81 cents in maintenance incident to the saving of energy. The total car-miles run during the year was 46,640,406. At 81 cents per car-mile this shows a saving of $37,779 for the year 1923. This, added to $78,293, the value of energy saved, makes a total saving for the year 1923 of $116,072.

Curve 6 shows the total man-hours charged to the upkeep of electrical equipment per 1,000 car-miles. This curve is very interesting. From it can be seen how much time is spent in repairing and replacing electrical equipment per 1,000 car-miles. It is also a very good check on the curve showing the labor cost. In 1923

the average time spent per 1,000 car-miles for the upkeep of electrical equipment was 11.59 hours at 58 cents per hour or $6.72, against 12.50 hours at 56 cents per hour or $7 for 1922.

SAVING CONTINUED IN 1924

The curves also show a decrease in 1924 over 1922. The total cost of maintaining electrical equipment per 1,000 car-miles shows a saving of only 43 cents in 1924 as compared with a saving of 66 cents in 1923. Although the material cost for maintaining electrical equipment has decreased, the cost of labor has increased. Curve 6 shows that the total man-hours charged to the upkeep of electrical equipment per 1,000 car-miles when compared with 1922 has decreased. A 3-cent per hour increase in the average wage of the electrical workers accounts for this condition.

About a 30 per cent reduction in 1924 over 1922 is shown by the brakeshoe curve. This is attributable to increased coasting.

The total cost of maintaining electrical equipment per 1,000 car-miles was $9.62 for 1924 compared with $10.05 for 1922, or a saving of 43 cents per 1,000 car-miles. To this must be added a 21-cent saving in brakeshoes, which gives a total saving of 64 cents per 1,000 car-miles in the upkeep of the cars. The total mileage for the year 1924 was 44,836,818. Multiplying this by 64 cents netted a saving of $28,696. Added to $66,605, the cost of power saved, this makes a total saving for the year 1924 of $95,301. A summary of the amounts saved in relation to the cost of meters is shown in Table I. This indicates that the total cost of the energy-saving devices was saved during the first year's operation, with a reduction in energy of only 5.35 per cent.

TABLE I—SUMMARY OF THE SAVING EFFECTED, IN RETURN UPON THE TOTAL CAPITAL EXPENDITURE OF $106,045 FOR METERS

		Saving in Energy				
Year	Per Cent	Gross	Operating Charges	Net	Saving in Maintenance	Total Net Saving
1923.....	5.8	$112,691	$34,398	$78,293	$37,779	$116,072
1924.....	4.9	99,239	32,634	66,605	28,696	95,301
Total..	5.35	$211 930	$67.032	$144 898	$66 475	$211 373
Return on investment, per cent.....				136	63	199

TABLE II—FORM OF DAILY REPORT SUMMARIZING EQUIPMENT TROUBLES AS SHOWN ON MOTORMEN'S ENERGY-SAVING REPORT CARDS

To the Superintendent of Transportation,
Dear Sir:
The following motormen have reported trouble on the cars as shown on the meter cards of February 14:

Sheds	Car No.	Name	Trouble	Remarks by Shopman
Delmar and DeBaliviere.....	718	L. B. Brown	Hot box	No. 3 wheel hot journal bearing. Repacked. O. K.
Delmar and DeBaliviere.....	737	B. G. West	Doors out of order	Front door out of order. O. K. Shop.
Delmar and DeBaliviere.....	949	F. P. Jones	Crippled car	Held in shop for a line switch. O. K.
Delmar and DeBaliviere.....	921	D. J. White	Bad brakes	Held in for brakes.
Delmar and DeBaliviere.....	2246-444	Wm. North	Controller burnt out	Cable grounded in controller. Held in for repairs.
Jefferson and Geyer.....	1838	Jas. Hill	Crippled car	Broken axle cap bolt No. 1. Held in shop.
Jefferson and Geyer.....	2293	H. L. Day	Crippled car	Broken brush spring No. 2 motor. O. K.
Spring and North Market.....	1515	A. B. Black	Motor trouble	Inspected and found O. K.
Spring and North Market.....	2105	F. E. Beach	Crippled car	Grounded field No. 1. Held in shop.
Prairie and Easton.....	2195	P. D. Green	Gong out of order	Repaired.
North Broadway.....	1928	Jos. Stone	Crippled car	Grounded armature No. 2. Repaired.
North Broadway.....	2155	E. J. Smith	Crippled car	Broken brush-holder No. 1. Repaired.
South Broadway.....	2358	R. T. Bridge	Meter out of order	Reported to day man.
Hodiamont and Maple.....	632	Wm. Rock	Flat commutator	No. 3 motor. Held in shop.
Grand and Kossuth.....	781	John Weeks	Bad brakes	Brake valve changed.
Virginia and Walsh.....	649	L. H. Shore	Motor trouble	Flat commutator No. 1 motor.

Yours truly,

Chief Clerk, Power Saving Department.

TABLE III—INCREASE IN THE PER CENT ENERGY SAVING OBTAINED DURING PERIOD WITH INSTRUCTOR WORKING AT SHED

Sheds	Date	Days at Shed	Men at Shed	Per Cent Saving With Instructor Working	Per Cent Saving Before Instructor Worked	Increase
Delmar and DeBaliviere.....	March 1 to March 20	17	256	7.70	6.52	1.18
Newstead and Fairfax.....	July 9 to July 16	6	127	11.12	9.06	2.06
Jefferson and Geyer.....	June 10 to June 25	12	195	10.44	8.85	1.59
Spring and North Market.....	April 23 to May 4	10	128	7.79	6.53	1.26
Prairie and Easton.....	Feb. 13 to Feb. 29	15	121	5.56	4.89	0.67
South Broadway.....	March 21 to April 1	9	125	4.08	2.83	1.25
North Broadway.....	April 2 to April 14	11	151	10.14	8.15	1.99
Compton and Dexter.....	June 26 to July 8	9	115	9.09	5.56	3.53
Manchester and Kraft.....	Feb. 2 to Feb. 12	9	89	2.58	0.39	2.19
Hodiamont and Maple.....	May 5 to May 18	11	136	9.78	8.10	1.68
Virginia and Walsh.....	April 15 to April 22	7	125	8.80	7.78	1.02
Grand and Kossuth.....	Aug. 5 to Aug. 13	7	100	18.81	16.29	2.52
39th and Park.....	May 27 to June 9	10	126	10.80	10.15	0.65
	Total.....	1,794	116.69	95.10		21.59
	Average.....	138	9.98	7.32		1.66

TABLE IV—PER CENT SAVING COMPARED WITH "BLIND" PERIOD AND INCREASE OR DECREASE COMPARED WITH CORRESPONDING PERIOD OF PREVIOUS YEAR

	October				November				December			
Sheds	1923	1924	Increase	Decrease	1923	1924	Increase	Decrease	1923	1924	Increase	Decrease
Delmar and DeBaliviere.....	8.47	8.57	0.10	....	8.15	6.70	....	1.45	7.56	7.53	....	0.03
Newstead and Fairfax.....	10.08	7.76	....	2.32	7.98	7.82	....	0.16	7.90	7.07	....	0.83
Jefferson and Geyer.....	4.50	10.32	5.82	....	4.74	9.75	5.01	....	4.74	8.34	3.60	....
Spring and North Market.....	7.55	11.88	4.33	....	7.04	8.69	1.65	....	6.74	8.78	2.04	....
Prairie and Easton.....	6.35	8.01	1.66	....	7.07	7.73	0.66	....	6.19	7.19	1.00	....
North Broadway.....	9.84	13.12	3.28	....	6.77	11.1.	4.34	....	8.40	9.66	.26	....
South Broadway.....	6.88	7.98	1.10	....	6.11	6.26	0.15	....	5.48	6.73	1.25	....
Compton and Dexter.....	7.03	9.35	2.32	....	6.34	7.16	0.82	....	4.84	5.49	0.65	....
Manchester and Kraft.....	5.90	9.72	3.82	....	4.00	9.04	5.04	....	2.71	6.67	3.96	....
Hodiamont and Maple.....	8.10	9.44	1.34	....	8.10	7.50	....	0.60	7.01	7.32	0.31	....
Grand and Kossuth.....	11.02	17.07	6.05	....	12.99	15.09	2.10	....	11.73	12.83	1.10	....
Virginia and Walsh.....	7.21	12.08	4.87	....	8.49	10.28	1.79	....	7.44	9.88	2.44	....
39th and Park.....	9.45	9.20	....	0.25	9.45	7.76	....	1.69	6.34	6.32	....	0.02
Missouri Electric.....	15.30	17.94	2.64	....	15.30	14.91	....	0.39	11.65	9.19	....	2.46
Average for system.....	7.60	9.87	2.27	....	6.73	8.32	1.59	....	6.29	7.51	1.22	....
Switchboard saving.....	5.26	6.70	1.44	....	3.58	4.74	1.16	....	3.60	2.29	....	1.31

It is interesting to note that the curves on the cost of maintenance follow inversely the energy-saving curve shown on another chart. This is particularly noticeable from July, 1923, to the present. During the latter months of 1923 the energy saving dropped off and the cost of maintenance increased. Likewise in 1923, when the saving increased, the maintenance costs dropped off. This is striking proof that the reduction of maintenance cost follows energy saving. It illustrates another reason for a strong follow-up system which will impress upon trainmen the importance of saving energy.

Wheel Wear Little Affected

Curve 5 for wheel cost shows a slight increase in 1923 and a slight decrease in 1924 from 1922, but in both cases it is very small. This tends to indicate that wheel wear is affected not so much by energy saving as by other factors, such as condition of track, condition of special work, flange breakage, etc.

Installation of the meters has made the motormen realize that their work means more than merely taking the passengers to their destination; they now appreciate that it is also their duty to handle their cars smoothly and economically. Motormen are instructed to note on their meter cards all trouble with their car or equipment which interferes with safe operation and the economical use of power. Because the motormen know that a card showing excess use of power is carefully scrutinized, they prefer to report the trouble rather than be asked to explain their poor operation.

Before the meter cards are sent to the general office, the shed repairmen look over the cards to check troubles indicated. The meter cards are then sent to the power-saving department at the general office. From the cards on which trouble has been reported, a typewritten report showing the shed, car number, motorman's name, trouble and shopman's remarks is sent daily to the superintendent of transportation. A sample report is shown in Table II.

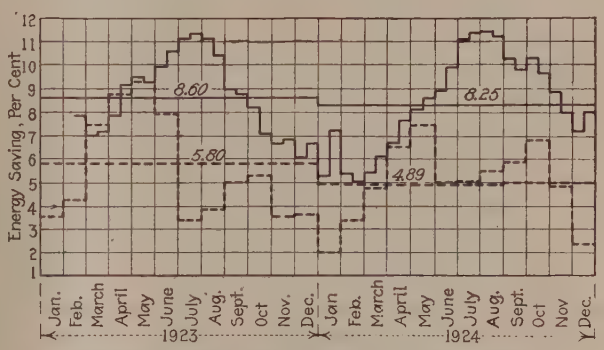
Monthly Summary of Troubles

At the end of each month these daily reports are gone over and all cars reported two or more times for the same or similar trouble are listed on a monthly report, a copy of which is sent to the superintendent of transportation and the master mechanic. The main purpose of this report is to inform these department heads of the cars that are causing trouble continuously so that a check can be made on the inspectors to see that they are not passing up cars that are in improper condition. These reports are supplementary to the regular shop reports. The car crew must make out the regular crippled car report, and the master mechanic gets his reports from his own department. These records serve as a duplicate check.

After the report of car trouble is written, the meter cards are given to the various clerks, who subtract the meter readings, adjust the kilowatt-hours of the various types of cars differing in weight and motor equipment that are used on the same line to the standard type set for each line, and calculate the mileage. The cards are then filed according to run numbers with individual index cards. The cards of each motorman are totaled after a period of two weeks, and the kilowatt-hours, car-miles, and the energy consumption per car-mile are entered on the index cards, which are then arranged according to the energy used per car-mile. The man with the least consumption per car-mile ranks first on the report.

This is a comparative report by lines of energy used by the motormen. The rating number, motorman's name, run number, adjusted kilowatt-hours, actual motor car-miles and the average kilowatt-hours per car-mile are listed for three periods, "this period," "last period" and "best period," while operating on that particular line. This report is posted on the carhouse bulletin board and a copy is sent to the instructor, the division superintendent and the office. So far, only one report has been sent out showing the "best period" figure per car-mile, and therefore the necessary data are not available to determine accurately what results this column will achieve. It seems, however, that improved results will be obtained by showing the best period figure, as it gives to both the motorman and to the instructor an idea of what the individual man can do. The energy-saving instructors, of whom there are two, teach the men how to operate their cars more economically. Table III shows the saving that can be made by proper instruction. It indicates that a follow-up system is of great value and that it helps to keep the men interested.

Three sets of general cards are kept on file, each set showing the total kilowatt-hours, miles, and the average kilowatt-hours per car-mile. The first is a record of the regular men only operating on each line; the second is that of the extra men operating from the various sheds; the third, is for the total of all men operating from the sheds. From the total cards of all men the per cent energy saving at the cars for the system is calculated. This saving at the cars is determined from a one-week "blind" test, run on each line when the meters were installed. No adjustments are made on the "blind" for any variation in temperature and passenger travel per car-mile.



Per Cent of Energy Saved Is Shown by These Curves for 1923 and 1924

Solid lines show the saving at the cars as given by motormen's records; dotted lines show the saving at the a.c. switchboard.

It is at the a.c. switchboard that the result really shows money saved. Being so essential, it is calculated as accurately as possible. The blind figures were worked up from the data of twelve months immediately preceding the initial installation of the energy-saving devices. At this point the "blind" is adjusted for both temperature change and passengers per car-mile. The accompanying curve of power saving shows the saving at cars, computed from motormen's record, and also the a.c. switchboard figures by months for the years 1923 and 1924. It will be noted that the saving at the cars is greater than at the switchboard, which is due

to the fact that the d.c. blind is not adjusted for change in passengers and weather condition. To the d.c. consumption at the cars must be added the distribution losses between the substation and the cars.

There are other records kept in connection with the work of power saving. Each month a report is worked up showing the per cent saving by sheds as compared with the "blind" period, giving the increase or decrease compared with the corresponding period of the previous year. The last three months of 1924 are shown in Table IV. This report is sent to the company officials and to the instructors. It is a check on the success with which interest is being maintained after the meters have been on the cars a number of years.

Radio Used to Discover Electrical Defects in Cars

Outdoor Antenna Placed Parallel to the Trolley Wire Has Proved Useful to Detect Arcing from Brushes, Commutators and Trolley Wheels

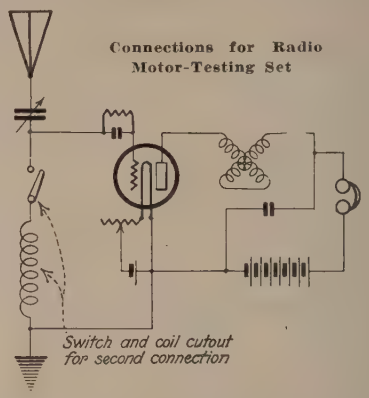
By John O. Gerson
Cadet Engineer Charleston Consolidated Railway & Lighting Company, Charleston, S. C.

USE OF a radio receiving set to detect electrical and mechanical defects in cars is being tried by the Charleston Consolidated Railway & Lighting Company, Charleston, S. C. An unusual coincidence was the direct cause for making this experiment. Local electrical dealers were doing a large business in radio supplies and it was to their interest in encouraging sales to reduce to a minimum noises from electric motors, arc lights, etc. The railway company had received several letters complaining in a general way about the radio noise caused by street cars. One morning a complaint was received, specifying by number two noisy cars. That afternoon both cars were reported by their motormen and had to be pulled in on account of electrical defects. This naturally suggested the idea that if radio sets carefully built not to hear static disturbances could detect defective motors, a set specially sensitive to static placed near a trolley wire could detect troubles even more easily.

With this thought in mind a small set was procured and installed with a loop antenna at the carhouse. Discharges were plainly heard and several defects discovered. It was then decided that an outdoor antenna placed parallel to the trolley wire could by simple induction and subsequent amplification make audible considerably more. A 50-ft. antenna was constructed about 100 ft. from the main line trolley wire and the set connected as shown in the accompanying diagram.

It will be noticed that in this set the primary circuit contains only a condenser and no coil, so that any low frequency voltage induced in the aërial will not cause oscillations in the primary but will merely be amplified by the tube and impressed on the secondary circuit in which the phones are placed. With this connection a noise very similar to that heard when standing in a car with its trapdoor open is heard in the phones. On four-motor cars the four motors can be heard distinctly at different pitches as far away as a mile. Every movement of the car can be heard long before the car is seen. A motor that is pulling too much current can be detected easily by the louder hum in the ear phones. In this way electrical or mechanical troubles which might easily get by the regular inspection can be discovered before the motor breaks down completely.

This set-up, however, does not allow the operator to detect high frequency arcs from brushes, commutators, trolley wheels—in fact, not any arc on the car. For this purpose a coil is connected across the primary con-



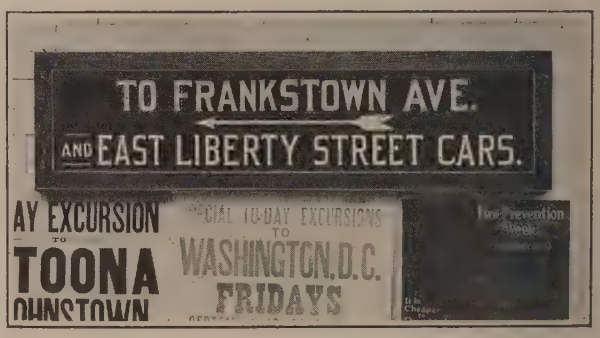
Connections for Radio Motor-Testing Set

denser making an oscillating circuit in the primary. Any arc in the vicinity of the aërial will then make a loud hiss in the phone. A little practice enables the operator to determine the origin of the different kinds of noise. For instance, a sustained arc is due to a defective brush, a rather weak variable arc is caused generally by commutators, and an intermittent arc by worn or defective trolley wheels.

Several worn brushes and trolley wheels have been located by the second connection. As an experiment one of the cars was connected up with one commutating pole reversed. While no appreciable arc was seen at the commutator, the noise in the phones was exceedingly loud, indicating a heavy current and some arcing.

The scheme is still in the experimental stage as far as actual car inspection is concerned, but it is planned in the near future to have one of the shopmen listen in as the cars go by the carhouse on the last trip at night and make out regular defect reports as he hears the various noises from the cars.

Signs in Railroad Station Tell How to Reach Street Cars



In Pittsburgh Signs of this Type Tell Strangers How to Reach Trolley Lines

AS PART of its program of doing everything possible to encourage riding on the street cars, the Pittsburgh Railways has placed a number of signs in prominent locations to tell strangers how to reach the trolley lines. Through the co-operation of the Pennsylvania Railroad such signs have been placed in both the downtown and East Liberty stations. An example of the type of sign used is shown in the illustration.

Speeding Pole Setting in San Francisco

Portion of the Poles Below the Level of the Pavement Was Abandoned and a Steel Base Which Was Constructed and Set in the New Location Was Used to Support the Upper Part of the Pole

By S. L. Foster
Chief Electrician Market Street Railway, San Francisco, Cal.

WIDER streets for highway traffic were necessary in San Francisco and an order was recently issued by the city to reduce the sidewalk area in some streets. This required moving back for a distance of 5 ft. a double row of steel tubular poles used to support the overhead trolley construction of the Market Street Railway. This is the second narrowing of the sidewalk area that has taken place in San Francisco. The first one, in 1915, reduced the area 3 ft. The methods used for trenching the ground and moving back the railway company's poles with concrete settings as a unit were described in ELECTRIC RAILWAY JOURNAL for Oct. 23, 1915.

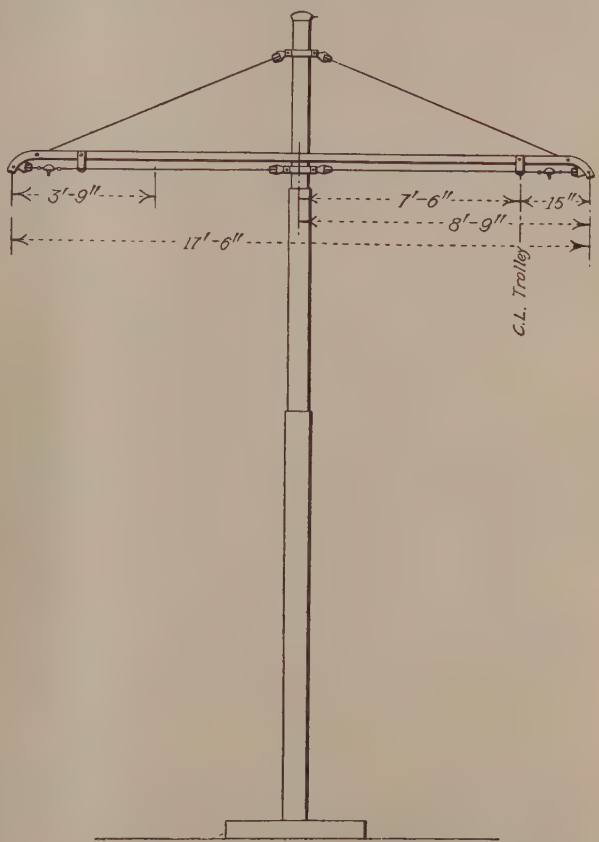
The concrete settings were 2½ ft. square and 6 ft. deep. With the poles in place these were moved by using a roller framework. This method was considered too slow and expensive for the recent work, and new methods were adopted which increased the speed of moving to nine times that of the former job. Three poles were moved per day as compared with one pole in three days previously.

The poles were set in metamorphosed and shattered traprock. For excavating this material, Ingersoll-Rand pneumatic pavement breakers were used instead of employing the manual method with gads and hammers used for the first job.

The second change from the previous method was to abandon the part of the pole below the level of the pavement. This made unnecessary the digging of a trench in the rock 4 ft. wide, 5 ft. long and 6 ft. deep as a runway for the passage of the pole, which was necessary with the previous method. A new pole hole 2 ft. square and 6 ft. deep was dug at the new site through the use of a compressed-air gadder. A steel beam 8 ft. long, built of three 38-lb. scrap slot rails from dismantled cable railways, was fitted inside the hole. When set in place this beam projected about 2 ft. above the sidewalk. It was concreted in place by using abandoned basalt paving blocks which were at hand for packing the space between the beam and sides of the hole. In setting the beam the web was placed in the line of greatest stress. The two angles forming one end of the beam cross-section were placed at the back of the hole so as to be in tension, and the single angle at the front of the hole in compression. After being concreted in place the cement was allowed to set for 24 hours.

The concrete setting about the old pole was broken down to a level below the excavation for the subgrade of the new roadway. The tubular steel pole was cut off level with the excavation by means of an oxy-acetylene torch. This required but a few minutes. The amputated top part of the pole was then fitted tightly over the projecting beam in its new location, plumbed up carefully and the space between the pole and beam was filled with grout poured through the top of the pole, the bottom of the tube being below the sidewalk level.

The reconstructed pole was stronger than when new and the moment of inertia of the built-up beam was in excess of that of the tubular pole alone. The exterior appearance was unchanged and the hazard of failure



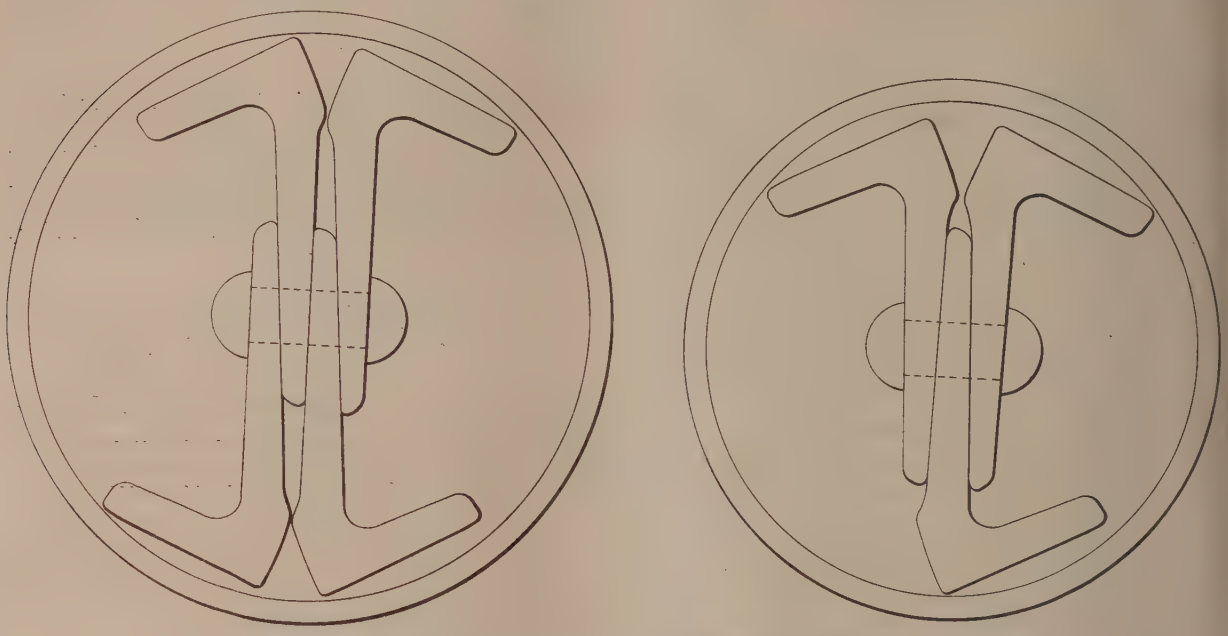
Center Construction with Heavy Reinforced Poles

from corrosion at the base was reduced considerably through the solid reinforced column construction. Even if the steel tubular envelope should rust at the sidewalk line there still would remain the reinforced-concrete core inside, which would continue to support the structure.

The construction used for the built-up beams of different size poles is shown in an accompanying illustration. The cement filling being an inhibitor of oxidation in steel, it protects the interior surface of the pole and also the outside surface of the beam from corrosion. The coefficients of expansion for cement and steel are about the same, so that no serious contraction of expansion strains are set up in the composite pole.

The digging of new holes and setting of the beam

supports in concrete were carried on ahead of the other work so as to allow the concrete to set. Also, instead of changing the poles adjacent to the beam to the new location a pole was used from the preceding span. By this arrangement the old pole was used as a gin pole to hoist the new pole into place over the beam, and by delaying the burning off of the adjacent pole until the new one was in place, the newly constructed composite pole was made to serve as a gin pole to support and lower the cut-off portion of the old pole. With this method there was always a firm pole available to which span, pull-off, anchor or feed wires could be attached for moving and hoisting.



Left, Section of 8-In. Pole Reinforced by Built-Up Beams. Right, Similar Section of 7-In. Pole

This method of construction also had advantages where there were feeders on the pole. With the old method of moving some means had to be provided for pulling over the top of the pole as the feeders were carried back. Where poles were opposite high buildings this was sometimes quite difficult. The old method required the use of temporary poles, fire escapes on buildings, etc., for supporting various moving tackle. With the new method wires were transferred from the old pole to the new location after it was set firmly in place.

With regard to the cost of this work, allowing for the labor and materials in the built-up beams, together with the cement for setting in the ground and inside the pole, the expense per pole moved was 70 per cent less than with the previous method. Of course, the relative cost of the two methods would be influenced largely by the distance that it was necessary to move the pole. For a move much less than 5 ft. in rock the use of a new beam might be more expensive than that of moving the pole as a unit. On some other work where poles were set in soil which could be excavated easily, it was found that the method of trenching and moving the pole to its new location was 45 per cent cheaper than the cost of cutting out the old pole from its concrete setting.

On the Embarcadero fronting the bay a different problem in pole reconstruction was solved. The ground in this section has all been filled in and it settles on an average of 0.1 ft. per year. Due to this settling, at intervals of from ten to fifteen years a corrected grade is established and sidewalks, street, curbstone, track and overhead construction all have to be raised to conform to the correct grade. When the first raise in grade was made, instead of hoisting up the poles and resetting, it was found easier to splice out the poles at the top. This pole extension consisted of an extra strong pipe reinforced and attached to the top of the pole by a slot rail beam which entered both the pole top and the pipe extension. This was similar to that just described for the beam at the base of the pole. This beam was cemented into the extension and the pole proper so as to make a neat appearing and almost invisible splice.

In 1915 the grade for this section was raised again and at the same time the sidewalks were moved back, so that a double operation of raising the poles and moving them back was necessary. Since the poles had not been raised up to meet the previous change in grade, it was found that they set approximately 10 ft. below grade. To meet this condition it was found that the cheapest way was to set a new 30-ft. extra strong pole at the new location and burn off the old pole at the point low enough down to furnish a full length 30-ft. pole. The remainder of the pole was abandoned.

Another problem in pole setting was presented several years ago when the city authorities demanded that center poles be used on McAllister and Larkin Streets. The railway felt that there would be considerably increased hazards to poles in this location from the vehicular traffic and that a special heavily constructed pole was necessary. It was decided to use a pole of very sturdy construction with a tapering built-up steel beam inside and reinforced with concrete. This was described in ELECTRIC RAILWAY JOURNAL for July 15, 1916. Since these poles weighed 3,100 lb. each their raising and setting presented some difficulties. They were too heavy to be piked in by the linemen and the use of a gin pole interfered with the operation of cars

and also presented a slow method. The problem was eventually solved by using a traveling crane car which had a capacity of 5 tons.

In carrying out this work the holes were first dug and the poles were delivered to a convenient location. At intervals between the operation of passenger cars the crane car ran along the section and lifted the heavy poles and put them rapidly into the holes. The linemen later on plumbed them into position and concreted them in place. In order to protect the poles from highway traffic a raised concrete platform 4 ft. x 7 ft. and 6 in. high was built around each pole. This was painted white so as to be seen readily by drivers. The poles were also painted white for a distance of 7 ft. up from the base. The use of these heavily constructed poles for the center location has proved entirely satisfactory and they are in good condition at the present time, although many trucks and automobiles have been injured against them through careless driving of chauffeurs.

Wooden Trestles Eliminated on Lake Shore Electric

All Work Done by Company Forces Alternating with Periods of Active Maintenance Work—Concrete Footings and Piers Were Constructed Without Disturbing Traffic

By A. V. Brown
Engineer Maintenance of Way and Construction
Lake Shore Electric Railway, Sandusky, Ohio

CONSTRUCTION of bridges on electric lines oftentimes involves engineering and economic features that are equal to or greater in importance than some of the pure electrical installations that are given prominence. The replacement of wooden trestles on the Lake Shore Electric Railway was the result of conditions that exist on many railway lines.

When the Lorain & Cleveland Electric Railroad was built in 1897, four single-track wooden trestles were constructed at openings varying from 300 to 576 ft. in length. The bents of these trestles were standard, with 12-in. x 12-in. posts, batters, sills and caps, cross-braced with 3-in. x 10-in. and 6-in. x 8-in. longitudinal bracing. In 1906 this line was double tracked and, in order to do away with growing and prospective maintenance, the two shorter trestles were replaced by concrete culverts and fills.

However, the maintenance on the remainder of the trestles continued to increase until by 1923 the upkeep on them had become so excessive that it was decided to replace them with a type of construction which would be largely free from continuous maintenance. Estimates were accordingly made on solid fill, including a 20-ft. concrete arch culvert and a 12-ft. flat top concrete undercrossing, and a deck girder bridge supported on reinforced concrete piers. The trestle type with reinforced concrete piers at 32-ft. centers with 30-in. 200-lb. girder beams (Bethlehem section) was finally adopted. The decision was influenced to a certain extent by the necessity to maintain traffic on both tracks as far as possible throughout construction, and because these girder beams could be handled by comparatively light erecting equipment.

In order to handle the work with regular maintenance forces, the trestle was built in two sections, one in 1923 and the other in 1924-25. The footings below ground were made of 1:3:5 concrete and above ground of 1:2½:4 concrete, as were the piers and struts connecting every other pair of bents. The piers for the 320-ft. section built in 1923 were reinforced with old 4-in. 45-lb. girder rails and those for the 224-ft. section, built in 1924, with 1-in. square deformed bars. The old rails were placed where a 1-in. square deformed bar was required. The concrete struts connecting alternate pairs of bents were reinforced with old 7-in. girder rails wrapped with No. 9 wire. All reinforcement had a minimum covering of 2 in. of concrete.

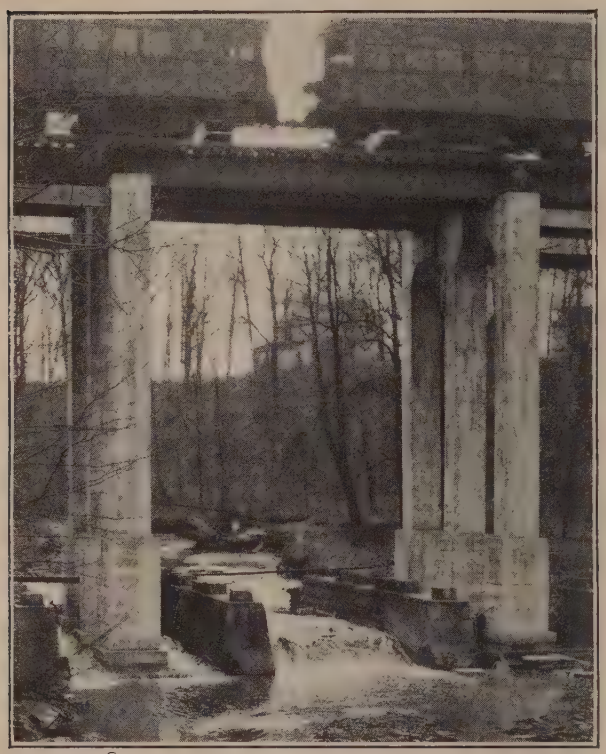
The tops of the footings were built to uniform grade so that groups of piers would have the same height above the footings, and the same forms could be used without alteration. Eight of the piers were 28 ft. high above the footings; 6 were 24 ft.; two, 20 ft.; and two, 12 ft.

The concrete was placed by a concreting train consisting of three flat cars. The first car contained sand; the second, the mixer, water tank and cement; the third, stone. The cement, water and aggregate were carefully measured to insure uniformity in the concrete, which was placed as dry as could be worked around the reinforcement.

This Substantial Type of Reinforced Concrete Trestle Replaced a Wooden Structure on Which Maintenance Had Become High

When all the concrete piers were ready, the old tracks and decks were removed one at a time, leaving one track open for operation except for short intervals. The steel girders were then set in place with an electric derrick and fastened down with flange plates, which fitted over bolts embedded in the concrete piers and were then welded to the girders.

The work, including design and construction, was done under the supervision of the writer. Construction



The Concrete Footings and Piers Were Constructed Without Disturbing Traffic. Work Was Done by the Maintenance of Way Forces of the Company

was so arranged as to give a minimum delay to traffic. It interfered in no way with other work on the line because it could be discontinued on short notice and resumed when circumstances permitted. The work was done by company forces without the addition of any extra men, and provided steady employment for the regular maintenance crew, when otherwise it might have been necessary to reduce forces with a corresponding loss in morale. The practice has proved so satisfactory that the concrete footings for a similar trestle to replace the remaining wooden trestle will be placed this fall and the rest of the construction done as part of the maintenance program which is planned for the coming year.

Cash Handled by Local Express Company

IN HANDLING money between carhouses and downtown banks, the Chicago Surface Lines has abandoned the use of cars operated over its lines and has made a contract with a local express company to do this hauling. Protection is furnished by bond and insurance. Money is collected by the express company from sixteen carhouses and is delivered directly to three downtown banks.

Remodeled Cars in Trenton

BY H. E. KROUSE
Superintendent of Equipment Trenton & Mercer County Traction Corporation, Trenton, N. J.

SINCE the first of this year the Trenton & Mercer County Traction Corporation, Trenton, N. J., has operated its cars exclusively with one man. Of the cars operated 50 were of a large double-truck type with comparatively small platforms, narrow aisles and with no special equipment to facilitate operation in emergencies or even under normal conditions. This lack of equipment caused criticism from the traveling public, affected the keeping of schedules and aggravated a serious traffic situation which, due to Trenton's geographical layout and rapid growth, was assuming serious proportions.

With the proper equipment for front entrance with rear exit on the older type large cars, operated by one man, two things were accomplished. First, the stopping time at points of heavy passenger interchange was shortened by eliminating aisle friction and providing for loading and unloading simultaneously. Second, due to a rear exit, a more uniform distribution of the passenger load, particularly during the peak hours, was obtained. National Pneumatic Company's automatic treadle device for control and operation of the rear doors was chosen for experiment on two cars.

To utilize this equipment and secure a greater factor of safety in operation the cars were repiped, using Safety Car Devices safety equipment with the exception of the dead man control and foot valve. To compensate for this a conductor's valve was installed with a pull cord running the entire length of the car body. This was marked plainly as to its emergency use, for the benefit of the passengers.

All the desired results were obtained and operation

Remodeled Car Fitted with Automatic Treadle for One-Man Operation in Trenton, N. J.

was provided equivalent to the highly satisfactory but expensive form of two-man operation used by the company on Birney cars. In addition the advantage of safer operation was obtained by eliminating the human tendency to err at critical moments and in relieving the operator of a portion of his work of operation and responsibilities.

Equipment was ordered for 50 cars and it is now being installed as rapidly as possible. The illustration shows an old type of former interurban car re-equipped with these devices and now being operated by one man to try out the new equipment in congested city service.

Equipment Maintenance Notes

Rerailers Carried Under Each Car

UNDER each car of the Northern Texas Traction Company, Fort Worth, a pair of rerailers are carried in a special supporting bracket where they are convenient of access and can be quickly reached.

This practice has been the means of cutting derailment delays down to a minimum. Instead of waiting for a wreck wagon to arrive on the scene the crew can immediately set about the task of getting the car back on the track.

Each Car of the Northern Texas Traction Company, Fort Worth, Tex., Carries a Pair of Rerailers Beneath the Body

It is maintained that the practice of carrying these equipments on the outside of the car is much better than when they are carried inside under a seat or elsewhere. In the first place they are more readily accessible without loss of time while searching under seats for them. Furthermore, they are always in sight of inspectors, who thus can be sure that each car leaving the station is properly equipped.

Electric Paint Mixer Saves Time

BY USING a bench motor to operate a paint-mixing machine the Reading Transit Company, Reading, Pa., has been able to make a substantial saving in the time required for this process and also to secure a better mixture. The motor is mounted at one end of a table in the paint storeroom and is connected to the general shop lighting system. A belt drive from this motor operates a vertical shaft, to which a paddle has been attached as shown in the accompanying illustration. The length of the blades is such that the paddle will turn freely inside a 3-gal. can of white lead. The height of the paddle can be adjusted by an arrangement of screws. In actual operation, however, it is unnecessary to resort to this, as the grip of the blades in the paint mixture is sufficient to draw the paddle down gradually to the bottom of the can.

Better Paint Is Made in Less Time by This Electric Mixer than Is Done by Hand

Compressor Cylinders Rebored in a Lathe

PRACTICE of the Montreal Tramways in reboring compressor cylinders was described in an article on maintenance methods of that company published in the July 2 issue of *Canadian Machinery and Manufacturing News*. The standard compressor cylinder bore is 5 in. When the walls are worn to 5.015 in. diameter the cylinders are bushed. Each cylinder is bored out to 5.375 in., and to a depth of $5\frac{15}{16}$ in., which leaves a shoulder about $\frac{1}{2}$ in. long at the bottom of the cylinder for the bushing to butt against.

Reboring of the cylinders is done on a Niles-Bement-Pond 30-in. engine lathe. A special fixture is used for holding the compressor cylinder casting which is mounted on the face plate of the lathe. This fixture is arranged so that setting up is done with a round shaft the same diameter as the crankshaft. Being parallel with the face plate, this insures a bore at right angles to the crankshaft. The fixture is made so that one cylinder can be bored and then by loosening a clamp and sliding the cylinder casting it can be shifted over the required distance to place it in position for boring the other cylinder.

In boring a compressor cylinder, two cuts are usually taken on the inside wall. The first is a rough cut and the second a finishing cut to obtain the correct size. The bushing used is of cast iron. It is turned on a small engine lathe to an outside diameter of 5.379 in., which allows 0.004 in. for a press fit. The bushing is $5\frac{1}{2}$ in. long with walls about $\frac{1}{4}$ in. thick before pressing in.

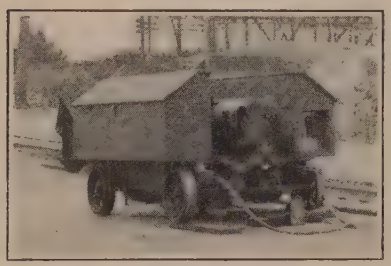
After the reboring is completed, the bushings are pressed in by using the lathe tail-stock for a press. As

the bushing is 5½ in. long and the depth of the shoulder 5$\frac{15}{32}$ in., $\frac{3}{32}$ in. of metal is left to be faced off the bushing in order to bring it flush with the end of the casting. Thus, even though the bushing is a tight fit, it is held in place between the shoulder and the cylinder head.

When one cylinder has been completely rebored and bushed, the casting is slid in the fixture and the second cylinder is finished in exactly the same manner. Then both bushings are rebored to 4.969 in., ready for the pistons. The time required for setting up and machining the first cylinder casting is about eight hours, after which a casting can be completed every six hours. The reboring of the bushings to 4.969 in., or 0.031 in. under standard size, enables the standard pistons to be used again. The pistons are turned to a diameter of 4.9685 in., or 0.0005 in. smaller than the diameter of the cylinder. This work is done on a Greaves-Klushman engine lathe. The piston is then lapped in, using oil and fine emery powder.

Car Compressors Supply Pneumatic Tampers

FOR supplying air to pneumatic tie tampers and concrete breaking machines the Lehigh Valley Transit Company, Allentown, Pa., has recently built a portable electric compressor outfit. Two General Electric 130-cu.ft. air compressors have been mounted on a steel framework. To this frame four 20-in. flanged



Portable Compressor Used by Lehigh Valley Transit Company on Track Maintenance Work

wheels are attached to permit operation over the railway tracks. In the center of the frame a jack has been so arranged that it will raise the entire apparatus several inches clear of the rails. It then can be turned at right angles to the track, lowered, and rolled clear to permit uninterrupted car operation. This process is reversed when it is desired to replace the outfit on the track. Movement from place to place is accom-

Dick Prescott Makes a Report

and Mullaney Is Interested

"COME into my office and tell me what you saw on your trip," said Thomas Mullaney, general foreman of the Consolidated Railway & Light Company, referring to the inspection trip which Dick Prescott and Steve White, respectively engineer of equipment and carpenter foreman, had just completed.

They followed him into his refurnished little office, and took seats in front of the new business-like flat-top desk.

"What did you fellows find that we can apply in organizing an engineering department here?" asked Mullaney.

"The Rushburg property has the best engineering organization we saw," replied Dick.

"What does the department there accomplish," queried Mullaney.

"In the first place," replied Dick, "one of its principal functions is to investigate practices and lay down approved methods of doing things. This is to co-ordinate the shop and carhouses, so that each foreman follows a standard practice after the proper method has been decided in a foreman's meeting. The engineer presents such information as he has available, either from other properties or from special tests conducted to check up on existing practices. Each foreman is free to express his ideas, so that the practice finally adopted represents the best of each man's experience.

"Then, after a practice is decided upon, it's issued in the form of a standard maintenance order which every foreman is required to follow until additional experience or changed conditions warrants a revision. At their regular weekly meetings, suggestions may be made by anyone present regarding a change or improvement in a standard practice order. Action of the body on the suggestion determines whether or not a change is made.

"We were told that in addition to systematizing and co-ordinating the work of the various maintenance departments, these standard orders are almost priceless when a change in personnel occurs. They showed us how a new foreman has available, in handy form, complete instructions regarding the approved methods of doing routine work. These orders also give the operating executive valuable information regarding maintenance practices on his property, so he's able to make comparisons and discuss these subjects freely when talking with salesmen or men from other properties."

"That seems like good business," said Mullaney. "How much of a job would it be to get that sort of a system started here?"

"It wouldn't take long to get under way," replied Dick. "I can make up a list of what seem like the most important items, work up our existing practices from information I can gather from the foremen, and then we can go over them in a series of meetings and approve or revise them as we go over the list. It'll take a little work at the beginning, but the list of orders will probably grow pretty fast, once we get under way."

"Fine," said Mullaney. "There's a job to start on. Get it under way, and let me see your list when you get it prepared. We started our foremen's meetings while you were gone, and we can take up these orders as soon as you begin to get them in shape.

"Now, what were some of the other things this department was doing?"

To refresh his memory, Dick pulled out his little notebook.

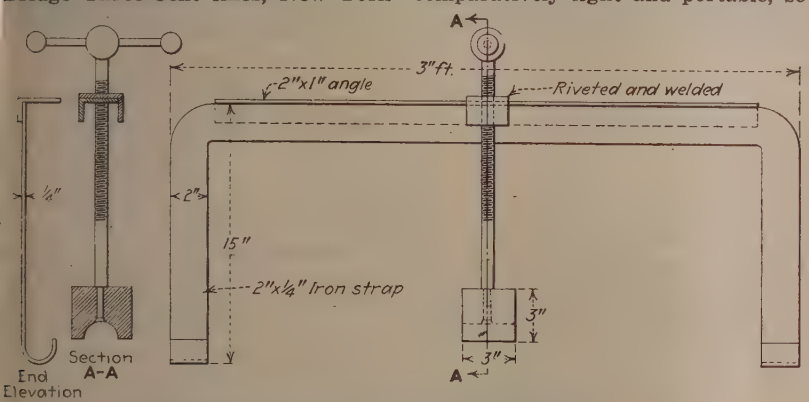
plished by coupling the compressor truck to a work car.

Underneath the framework are two ordinary street car type air tanks. A General Electric air governor is used to cut in and cut out the compressors as may be required. Power is secured from a "J"-shaped tap on the trolley wire, which does not interfere with the passage of trolley wheels. Sufficient capacity is provided to operate six tampers at one time, although four is the maximum usually used.

Straightening Trolley Poles on Cars

ONLY in extreme cases are trolley poles removed from cars for straightening on the Manhattan Bridge Three-Cent lines, New York City. A light, convenient device has been made by A. G. Norton, master mechanic, which can be applied to the bent portion of a pole quickly and a screw produces the necessary pressure. A piece of 2-in. x ¼-in. flat iron constitutes the principal member. This is 3 ft. long between the end hooks. The top edge of this iron is strengthened by riveting on a piece of 2-in. x 1-in. angle iron. In order to provide sufficient surface for the threaded portion at the center another 2-in. x 1-in. angle has been riveted and welded in place. A screw from a vise rescued from the scrap pile is used as the center member for producing the pressure. The lower end of the screw has a block hollowed out on one side so as to fit the trolley pole. The block swivels about the lower end of the screw.

The straightening operation consists of hooking the two ends of the iron strap around the pole, with one on either side of the bent portion. The screw, with center block, is then tightened on the bend and the pole is bent back into shape. The use of this device has proved a time and labor saver over the method of removing poles from cars for straightening.

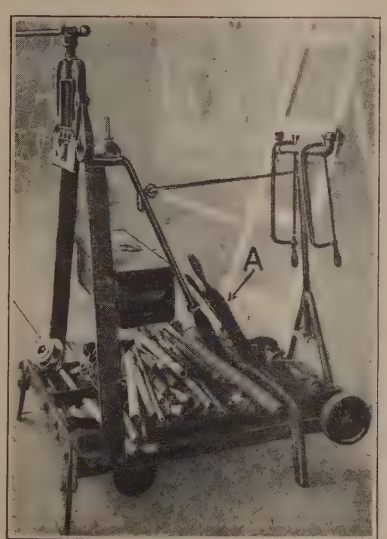


Light, Convenient Device Used for Straightening Trolley Poles Without Removing Them from Cars

Portable Pipe Bench in Dallas

BY J. L. BROWN
Master Mechanic Dallas Railway, Dallas, Tex.

SINCE a great part of the pipe fitting work done in a railway shop is in connection with repairs or overhauling work on the cars, a suitable type of portable vise which can be moved near to the point where the work is being done is a considerable time and labor saver. A device of this kind must not only be comparatively light and portable, so that it can be readily moved about from point to point, but it must also be substantially constructed and rigid enough to hold firmly pipe of comparatively large size while it is being cut and threaded.



This Pipe Bench, Built in the Dallas Railway Shop, Can Be Moved About on the Hand Truck

In the accompanying illustration is shown a portable outfit for this purpose which was designed and built in the Dallas Railway shop. The vise support is built up of substantial steel bar members carried up about 3 ft. high from a four-legged base structure. This base in turn is carried on a rugged hand truck which can easily be hauled about from place to place in the shop. The base of the vise support, instead of being mounted directly on the truck, is carried on four short levers tied together with parallel shafts on the truck bed. By this means the entire stand can be lowered by means of the hand lever *A* to permit the legs on the base structure to rest on the ground instead of on the truck wheels. This holds the stand securely in place while work is being done. To release the truck the hand lever *A* is pulled back from the position shown in the illustration, raising the stand on the two shafts to which it is connected. This lifts the legs off the ground and permits the truck to be moved around readily.

At the front end of the truck a light pipe framework forms a support for hanging hack saws and similar tools that are being used. Between two of the supports of the vise stand, a covered metal tool box carried on two brackets furnishes a place to carry extra dies and other small tools. On the bed of the truck is a tray large enough to carry miscellaneous short pieces of pipe, etc.

Welding Brush-Holder Castings

SOME difficulty has been experienced by the Third Avenue Railway, New York City, from the breaking of Westinghouse type 310 brush-holder castings just below the insulator studs. Repairs have been made to these by welding. In order to make certain that the insulator studs are kept parallel to the carbon brush box in the brush-holder, a special fixture is used for holding the box in alignment during the welding operation. A steel plate made to fit the carbon brush box accurately is bent over toward the brush-holder studs. Its top portion is fitted with two blocks which serve as a clamp for the insulator studs. The inside one of these two blocks is riveted to the upright plate while the outside block is loose. Clamping action is obtained by a cap screw which

holds the two blocks together. These have been drilled out so as to fit the brush-holder studs accurately. The plate member of the fixture is held in place in the carbon brush box by another cap screw that screws into the end of the plate while a washer resting on the lower side of the brush box serves as a clamp.

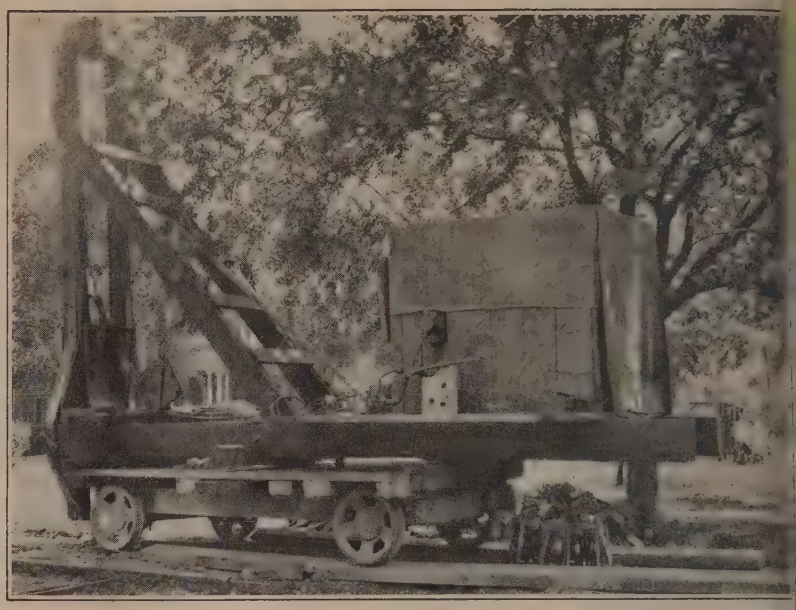
The upright member of the fixture is ¾ in. thick and each of the clamping blocks 1 in. thick by 3 in. long; 7/16-in. cap screws are used for clamping. The accompanying illustration shows a brush-holder casting in the fixture just after repairs have been completed.

Fixture for Holding Brush-Holder Parts in Alignment During Welding

Simple Pavement and Foundation Breaker

PRACTICALLY every track reconstruction job involves the work of breaking up old pavement or foundation material. In some cases, where the volume of work is sufficient to justify the expense, elaborate and efficient machines have been developed for this work. In San Antonio a very simple and inexpensive piece of equipment is used with satisfactory results. This consists of a simple timber derrick built on a small flanged-wheel truck, which can be operated as a trailer on the rails and is still light enough so that it can be hauled off to one side when not in actual use.

A heavy weight is supported on a cable passing over a pulley at the top of the uprights on the derrick and connected to a winch driven by an old railway motor. This raises the weight, which when released falls with enough force to break the foundation.

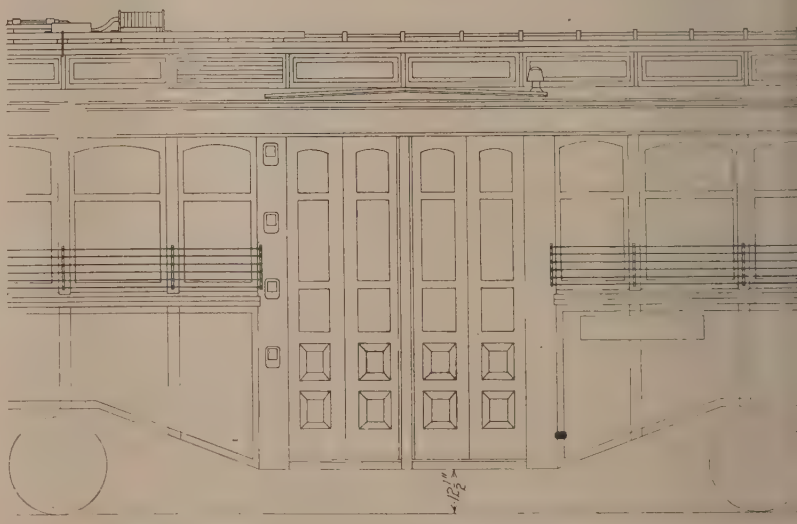


This Simple Pavement or Foundation Breaker Gives Good Results on Small Construction Jobs

Steel Side Posts Repaired by Welding

ALL CARS recently purchased by the Pittsburgh Railways have been equipped with center doors. For a considerable distance in the middle of the car the side framing has, therefore, been extended down well below the floor level. In this location the steel channels used for side posts are longer than those used elsewhere on the car and extend to within about 12½ in. of the railhead. Posts alongside the step well and those nearer the end of the car are unprotected on the inside of the sid sheeting. They are subject to con siderable wheel wash and trouble ha been experienced with their rustin away.

The company has found that a easy way to remedy this defect an restore the necessary stiffness to th side plate is to build up the posts b welding where they have rusted. A the rusting is usually most severe a the bottom of the posts the ordinar practice is to cut away as much o the channel iron as may be necessar to eliminate weak material and t weld on a short piece of the sam channel section at the bottom of th old posts. Repairs made in this man ner are comparatively inexpensiv and have proved very satisfactory.



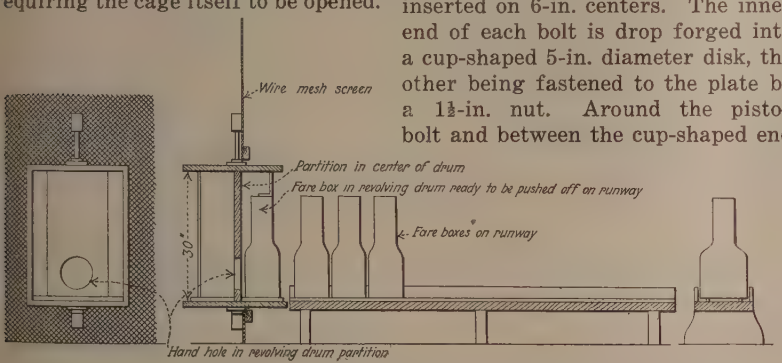
Welding Is Used as Shown by the Black Dot to Attach New Bottom Sections to Rusted Side Posts

City Gas Used for Cutting Torch

CITY gas is used for cutting purposes in combination with oxygen in the San Antonio Public Service Company's shop as a substitute for the more expensive acetylene. The gas is put under a pressure of from 80 to 90 lb. with an ordinary air compressor. It is stored in an outdoor tank which furnishes the supply to the welding room, where most of this work is done. For cutting work at other points a portable outfit is arranged on a small truck. This portable tank is filled from the main storage tank and may then be moved about to any desired point. This combination of city gas and oxygen is used only for cutting purposes. For welding work acetylene is found more suitable.

Fare Box Repair Cage in Houston

STORAGE of bad-order fare boxes that are brought in off the cars requiring repairs has been provided for in the shops of the Houston Electric Company by an ingenious arrangement. All the repair work on these boxes is done in a cage, so that a single workman may be held responsible. An arrangement is provided so that bad-order boxes may be placed in the cage at night without requiring the cage itself to be opened.


Wire mesh screen
Partition in center of drum
Fare box in revolving drum ready to be pushed off on runway
Fare boxes on runway
30"
Hand hole in revolving drum partition

This Revolving Drum Arrangement Allows Defective Fare Boxes to Be Placed in a Locked Cage During the Night so that They Are Ready for the Workman Who Is Held Responsible for Fare Box Repairs

This is done by means of a revolving drum mounted in an opening at one end of the cage.

A drum approximately 30 in. high is mounted on a shaft through its center so that it is free to rotate. Half of this drum extends into the fare box cage and the remainder projects out into the shop. A vertical partition divides the drum into two halves. Thus by placing a fare box in the half which is open to the shop, and then revolving the drum through one-half a revolution, the box is swung inside the cage. A circular hole near the bottom of the partition in the drum permits the fare box to be pushed off onto a runway in the cage arranged for this purpose.

As several boxes are thus brought into position, the entire string on the runway is pushed along as each successive box is pushed off of the drum. In this way, defective boxes can be placed inside the locked cage and the contents protected against disturbance until the authorized workman appears for duty in the morning. The cage arrangement is shown in the accompanying sketch.

New Equipment Available

Mechanical Unit for Handling Crossties

FOR economical mechanical handling of railroad crossties, the Hussey Manufacturing Company, North Berwick, Maine, has recently developed an interesting type of unit known as a tie lifter. This unit is suspended from the boom of a derrick or crane and, in operation, employs the same principle that is used in the operation of a grab bucket. Two sets of parallel grapple arms are opened or closed and lifted or lowered as desired by means of two drums and whips on the crane.

There are two sets of three grapple arms pivoted on a common axis. At the bottom end of each set is fastened a compensating grab-plate bar, through which piston bolts of 1½-in. diameter have been inserted on 6-in. centers. The inner end of each bolt is drop forged into a cup-shaped 5-in. diameter disk, the other being fastened to the plate by a 1½-in. nut. Around the piston bolt and between the cup-shaped end and the compensating plate is a heavy coiled steel spring, allowing for a variation in the length of the ties of from 4 in. to 5 in.

Just above and parallel to the grab plate on each side there is suspended a compression plate made of ⅝-in. tank plate, properly reinforced to distribute any concentrated pressure. Each of these plates is attached to the grapple arms by six heavy coil springs which permit a compensating movement of from 4 in. to 5 in. These plates true up a pile of ties at the same time that the grab bars engage a load.

The inward and outward motion of the two sets of grapple arms, necessary to engage a load of ties and to release them, is obtained by the action of a system of toggle arms fastened to the grapple arms about 3 ft. above the grab plate. These toggle arms, in turn, are actuated by two wire ropes which are attached to the two whips of the crane, the force of the tension in each rope being applied at the proper place through a system of sheaves.

The machine is 8 ft. 3 in. high, not including the two wire ropes. It is 11 ft. 4 in. long by 7 ft. wide over all and is designed to handle standard length ties, although by varying the length of the toggle arms a much greater variation in length may be allowed for. The new unit weighs between 2,800 lb. and 3,000 lb. without load and is designed to carry from 7 to 8 tons when fully loaded.

To load ties, the machine is swung out over a pile of ties which may be unlimited in length, the height of the pile being limited only by the length of the boom of the crane or derrick. The machine is lowered over the ends of the ties in an open position, after which the closing rope is taken up. This action closes the machine so that the piston bolts of the grab plate engage the ends of the ties six or seven layers below the top of the pile. The contact of these piston bolts does not injure the ties, is positive in its grip and lifts any ties which may repose above. Then when the hoisting rope is taken up further, the machine, with its load of from 40 to 50 ties, is picked up and swung over the car and the load deposited by lowering on the hoisting rope and taking up or holding on to the opening rope.

Association News & Discussions

New England Outing at Mount Tom

NEW ENGLANDERS will have the opportunity of visiting Mount Tom on July 23 when the New England Street Railway Club holds its annual outing at Holyoke, Mass.

From Boston cars will assemble at the Engineers' Club and leave at 7:30 a.m. Arriving at Holyoke, they will assemble at the Holyoke Street Railway office and leave at 11:30 a.m. for the Holyoke Canoe Club, where luncheon will be served at 12 o'clock. Beginning at 1 o'clock there will be a program of sports, including both field and water events for men and women. Facilities will also be available for those not entered in the contests.

At 4 p.m. the party will leave the canoe club for the Mount Tom Summit House, where dinner will be served at 6:30, and will be followed by dancing.

Reservations should be made with the committee on arrangements, George E. Pellissier chairman, Holyoke Street Railway, or the secretary, New England Street Railway Club, P. O. Box 2564, Boston, Mass.

Wisconsin Meeting Program

FOR the electric railway section of the Wisconsin Utilities Association the following program has been announced for the meeting to be held on Aug. 13-14 at the Hotel Wausau, Wausau, Wis.:

Thursday, Aug. 13, Beginning at 1:30 P.M.

Address of welcome, by H. L. Geisse, general manager Wisconsin Valley Electric Company.
Paper, "Shop Practice," by Nels Jensen, master mechanic Wisconsin Valley Electric Company.
Film, "Details of Manufacture of Cars," courtesy of St. Louis Car Company.
Paper, "Selection and Training of Bus Operators and Collectors," by A. J. Rowland, educational director the Milwaukee Electric Railway & Light Company.
Report of nominating committee and election of officers.

Friday, Aug. 14, beginning at 9:30 A.M.

University fellowship report, "Track and Paving," by E. M. Plettner.
Discussion of track problems, opened by William Neff, engineer Madison Railways.
Paper, "The Electric Railway Industry from the Manufacturer's Viewpoint," by N. G. Symonds, Westinghouse Electric & Manufacturing Company.
Address, by Lucius S. Storrs, managing director American Electric Railway Association.
Discussion of safety work, opened by J. W. Oliver, safety engineer Chicago, North Shore & Milwaukee Railroad.

There will be a "get-acquainted" luncheon Thursday noon at the local carhouse and a luncheon for the visiting ladies, following registration at the hotel. An informal dinner on Thursday evening will be followed by dancing at the railway's park at Rothschild. Friday noon there will be a luncheon for men and women at the Hotel Wausau, after which there will be the choice of a climb up Rib Mountain or an automobile trip to Eau Claire River Dells.

COMING MEETINGS OF *Electric Railway and Allied Associations*

July 23—New England Street Railway Club, annual outing at Mount Tom, Holyoke, Mass.
July 22-24—Electric Railway Association of Equipment Men, Southern Properties, Knoxvile, Tenn.
July 22-25—Pacific Claim Agents' Association, Hotel Biltmore, Los Angeles, Cal.
July 24-25—Central Electric Railway Accountants' Association, Hotel Waldorf, Toledo, Ohio.
August 12—Metropolitan Section A.E.R.A., Summer Outing at Pelham Bay Park, New York, N. Y.
August 13-14—Wisconsin Utilities Association, Hotel Wausau, Wausau, Wis.
August 27-28—Iowa Electric Railway Association, Operators' Section, Hanford Hotel, Mason City, Iowa.
Sept. 10—Central Electric Railway Master Mechanics Association, Grand Hotel, Anderson, Ind.
Sept. 28-Oct. 2—National Safety Council, Cleveland, Ohio.
Oct. 5-9—American Electric Railway Association, annual convention and exhibits, Young's Million Dollar Pier, Atlantic City, N. J.

Postpone Mid-West Claim Meeting

OWING to the exigencies of business which affected a large number of the members, the convention of the Mid-West Claim Agents' Association, which was scheduled to be held July 17 and 18, has been postponed. Notice of the date and place of the meeting will be given later.

American Association News

Mr. Storrs Visits Western Cities

LUCIUS S. STORRS, managing director of the American Electric Railway Association, is at present taking an extended trip through the West for the purpose of meeting electric railway men in all the larger cities. He also is becoming acquainted with the leaders of the Associated Advertising Clubs in the principal centers as well as the state directors of public utility information throughout the west.

The itinerary which Mr. Storrs expects to carry out is as follows: July 2-3, Chicago; July 5, Denver; July 18, Oklahoma City; July 24, Salt Lake City; July 26, San Francisco; July 31, Los Angeles; Aug. 3, San Diego; Aug. 6, Portland, Ore.; Aug. 7, Tacoma, Wash.; Aug. 8, Seattle; Aug. 12-13, Minneapolis-St. Paul; Aug. 14, Wausau, Wis.

At Wausau Mr. Storrs will address the convention of the Wisconsin State Utilities Association. While his appearance there concludes the itinerary th has been laid out, it is quite probab that he will cover other cities befo his return to New York.

Following this schedule it is his i tention to visit as rapidly as possib other parts of the country until he h become familiar with conditions in a the principal cities. During these tri he is collecting a vast fund of info mation which will be of great value t the association in the progressive wor in which it is now engaged.

Heavy Electric Traction

DISCUSSION of material for inclu sion in the annual report of th Engineering Association committee o heavy electric traction was the prin cipal business at the final meeting o that committee, held at associatio headquarters in New York City on Jul 15. Members present were J. C. Davi son, chairman; A. H. Armstrong, H. Brown, Morris Buck, H. W. Cope, M Burnham representing A. H. Dau Norman Litchfield, L. S. Wells, C. Harte, E. P. Chase representing J. V. Duer, R. B. White, J. T. Hamilto J. H. Davis and J. O. Madison.

Mr. Wells stated that his sub committee has reviewed the existin heavy traction standards of the assoc ation. No changes were recommende

Mr. Brown made a report regardin the status of the bibliography on heav electric traction. The matter of pos sible publication was referred to Chai man Davidson and Mr. Brown, confe ring with Secretary Welsh of the ass ciation.

For the sub-committee on branc lines and yard switching, Mr. Arm strong presented an elaborate repo giving the progress to date of sel propelled cars, which was approve with minor changes.

In the absence of Mr. Daus, Mr. Burn ham presented the report of the sub committee on articulated train opera tion. The cost figures of several artic ulated units were presented. Afte some discussion it was accepted as progress report.

Mr. Cope's sub-committee had pre pared records of progress in electrifica tion for the year. These will be pre sented in the committee's report.

Considerable discussion was devote to subjects for next year's committe It was recommended that the subject handled by the committee during th current year be continued. Particula attention was given to the investigatio of corrosion of iron and steel. This ha been referred to the committee on sub jects with the request that it be con sidered for inclusion in next year' program of the Engineering Associa tion. It was also proposed that th subject of connections between car which was discontinued this year, b included in next year's program.

The News of the Industry

Twin City Case Continued

Electric Railways, Cities and the State Commission All Involved in Rate Litigation

After seven hours of argument before three judges in the U. S. District Court hearing on the appeal of the St. Paul City Railway and the Minneapolis Street Railway from an order of the Railroad and Warehouse Commission fixing 8 cents and ten tokens for 60 cents as a permanent rate of fare on the two lines the case was continued to July 16. The plan of the lines is to remove the jurisdiction from the state courts for review of proceedings to date and fixing of property valuations and rates. Under a law passed by the Legislature in 1921 these lines were placed under jurisdiction of the commission as to rates.

Further oral arguments will not be heard by the three judges, but the cities will have until Tuesday night to file affidavits in rebuttal and the railways until Wednesday. Soon thereafter a decision is expected.

The railways argue the present rate of 6 cents and the proposed rates are confiscatory. The commission asked that it be given opportunity to put in its rate and study the effects on revenues and to learn what the city of St. Paul will do to relieve the City Railway from some of its city tax burdens.

Says Cities Should Be a Unit

St. Paul's counsel argued against the valuation fixed and the rate of fare. He said that the two cities should be considered as one unit in rate making. Counsel for Minneapolis sought to show the Minneapolis Street Railway should bear no relation to the St. Paul company in the matter of returns on capital invested. Judge D. F. Simpson for the companies charged errors by the commission in its valuations of the property of the two companies.

Judge Simpson said also:

> Soon we shall be appearing before the state commission to ask an increase for the Duluth company. I hope that the commission and we shall not then sit on opposite sides of the table.

He said that the increase in fare from 5 to 6 cents had yielded only 70 per cent of the additional revenues that had been expected by the Duluth company.

Points made by the railway counsel in affidavits were that the commission had erred in valuation of the property in these major particulars: Failed to include $1,700,000 to $1,900,000 for water power leases; eliminated fully $3,500,000 by not placing the value of paving and rolling stock up to present-day value; made depreciation figures far too low; if present-day unit prices were given due consideration, the value of the Minneapolis property would be in excess of $40,000,000; only 10 per cent of the passengers would pay cash under the commission's proposed schedule.

Meanwhile the Railroad and Warehouse Commission on July 9 got temporary orders from the District Courts of Ramsey and Hennepin Counties restraining the railways from putting into effect any rate of fare other than that ordered by the commission. Hearing was set for July 17 in both instances. The commission's order puts the new fare rates into effect on Aug. 1.

Thus the federal court is hearing the fare case on its merits and will determine whether it will assume jurisdiction; the street railways ask an emergency fare of 7 cents or more permanently; the cities ask that the commission's rate be restrained and that jurisdiction remain in the state courts; the commission asks the companies be deterred from putting in any other than the rates it has ordered.

Arbitration Under Old Plan at Boston

JAMES F. JACKSON, chairman, has resigned from the Board of Public Trustees of the Boston Elevated Railway Company because of Governor Fuller's virtual reversal of the policy the trustees had adopted in dealing with the carmen's union over the issue of arbitration and higher wages. He asked that the resignation may become effective at once. He states that the effort to secure a more disinterested board of arbitration has never been a dispute over technicalities, but over a fundamental principle of justice toward those who operate the cars, those who pay the fares and the general public. Had a strike on the Elevated developed, the trustees would have proceeded at once to fill the places and keep the service open. Governor Fuller has advised the men that they already are well paid. The carmen's union has voted to lay aside the arbitration issue for the present, thus agreeing with the Elevated trustees. This clears the way for arbitration according to the old method. James H. Vahey will represent the union and Roland W. Boyden the Elevated. They have not yet agreed upon the third arbitrator.

Chicago "L" Employees Renew Wage Agreement

The employees of the Chicago Rapid Transit Company, Chicago, Ill., who twice voted down an offer to continue the present wage scale, were told in conference with their leaders on July 16 that they had blundered and should call another election to correct their mistake and save the expense of futile arbitration. This they promptly did and voted authority to their agents to sign up for a year at the old wage.

William D. Mahon, international president of the Amalgamated, arrived in Chicago on July 13 and went into conference at once with the rapid transit line officials. He and John Bruce, president of the local, called attention to the fact that at no time in the negotiations had there been any strike talk. The Elevated officials, it was understood, repeated to President Mahon the outline of the financial situation of the company previously laid before the men by John Bruce. Mr. Mahon was convinced a wage boost meant a fare boost, and the latter was undesirable both from the company and the union standpoint.

The employees originally gave out as their sentiment a willingness to accept the 77-cent maximum for motormen and 71 cents for guards. They inserted a 5-cent boost in their terms, apparently for trading purposes. With 27 per cent of the vote polled, the tally showed the company's terms rejected. A second election was called and the result was the same.

Mr. Mahon, who left a physician's care after an automobile accident, told the men that all they had in wages had been won through joint action with the Surface Lines men and he deplored the smashing of that alliance by the contrary vote. "Industrial conditions do not warrant wage boosts," he said, "arbitrators will take into consideration the fact that 20,000 other traction men in Chicago are satisfied with their old wages." Shouts of strike and wild clamoring finally forced Mr. Mahon from the stage. "This is a riot," he said. "I will leave until the hotheads cool off." Far into the night the battle went until Mr. Mahon suddenly swung the tide in a favorable vote.

Eighty-Mile Extension for North Carolina Line

Extension of the Piedmont & Northern Railroad lines from Charlotte, N. C., to Winston-Salem by way of Concord, Kannapolis, Salisbury and Lexington will be made in the near future. James B. Duke, sponsor for the road, is ready to build at once and is only waiting for the public support in the enterprise to manifest itself before going ahead.

Former Governor Morrison acted as

spokesman for Mr. Duke. Mr. Morrison made it plain that the public will not be asked to subscribe to stock in the enterprise, but that business men in the territory to be touched by the proposed electric line will be asked to pledge their co-operation. Mr. Morrison gave assurance that Mr. Duke is ready and willing to invest from $10,000,000 to $15,000,000 in the enterprise.

The interurban extension would be 80 miles to connect at Winston with the Pennsylvania system through the Norfolk & Western. At Lexington it would connect with the Southbound, under the control of the Atlantic Coast Line, thus giving Charlotte and the Piedmont Carolinas the addition of two continental railway systems.

It was also indicated by Mr. Morrison that Mr. Duke is considering completion of the link in the Piedmont & Northern between Gastonia and Spartanburg, giving a continuous line between Anderson and Winston-Salem, should the proposed project be carried through.

Court Halts Illinois Commerce Commission's Work

The work of the Illinois Commerce Commission was halted in every county in Illinois outside of Cook and Sangamon, under an order issued on July 14 by Chairman Frank L. Smith as the result of a State Supreme Court decision. The decision holds illegal all actions concerning only one county where the hearing was held in another county. As the commission meets only in Chicago and Springfield, the invalidation covers most of the past routine cases in all other counties.

The practice of the commission has been to assign experts, usually employed from the outside, to hear all routine cases in the most convenient of the two cities. Some time ago the commission ordered the Big Four Railroad to halve its rate on brick hauled inside Vermilion County, and it was on the railroad's appeal of that case that the court ruled.

"The hearings in this case," said the court, "were conducted in the city of Chicago by H. M. Slater, a transportation rate expert employed by the Commerce Commission. Appellant contends that a hearing before an employee of the commission in a county other than the one where the subject matter of the hearing is located is unauthorized and the order issued by the commission in this case is therefore void."

Cases concerning only one county constitute two-thirds of the commission's business. However, a large part of the two-thirds comes in Cook County and apparently will not be affected as all these hearings are held in the Chicago office.

There are seven commissioners, three assistants and a secretary. Five more assistants have been authorized by law and will be appointed, but most of the time of the entire group is taken up by the larger phases of utilities handling and little time is available for any official to go into the field.

A rehearing of the court order has been asked for and the Attorney-General will plead for a reversal. The rehearing, if granted, will be held in October. The decision is signed by Chief Justice Floyd Thompson of Rock Island, Ill. There was no dissenting opinion.

New Owners at Richmond State Their Policy

The new management at Richmond, Va., does not come into the Virginia Railway & Power Company situation without some familiarity with its affairs. With Blodget & Company, Stone & Webster, Inc., have for a considerable period handled the bond financing of the Virginia Railway & Power Company, and Stone & Webster, Inc., also have done considerable work for the company in the engineering line. A statement made by Luke C. Bradley, president of the company, on behalf of the new owners says:

> We invite the city and state authorities and the citizens to ask our co-operation in any civic movement, and we will do our best not to be found wanting in our response to any such invitations. On the other hand, we know that we will have to ask the public for its co-operation in working out some of our own problems. We expect to take our problems, as they exist or arise, to the public in a full and frank manner with every expectation of a fair solution, and we recognize that no solution is a fair solution unless it is fair to both the public and the utility.
>
> We are not unmindful that a financially sound, efficiently and economically managed and progressive public utility is a great asset and vital force and influence in any plan for civic growth and development, and it is our hope that we will fully measure up to the expectations of the cities we serve in this respect.
>
> As we have now entered the public service business here, our property is dedicated to the public by law. To the maintenance of the high ideals of broad public service which that dedication imposes and implies, we pledge our whole organization and personnel.
>
> We do not mean to indulge in meaningless phrases when we say that we want the Virginia Railway & Power Company to merit, have and keep the reputation of being a good citizen.

United Railways Franchise in Preparation

When the Aldermen of St. Louis, Mo., reconvene in October, a draft of a proposed new blanket franchise for the United Railways will be submitted which will provide for co-ordinated bus and railway service and for a measure of city ownership. Before the franchise bill finally goes into effect the people will have a chance to vote on it, either under the initiative or a referendum election.

Since Mayor Victor J. Miller took office on April 21, last, several informal conferences have been attended by the Mayor, City Comptroller Nolte, City Counselor Senti and Consulting Engineer C. E. Smith, at which the question of a new franchise was discussed. Only two important provisions are not yet decided. They are the matter of the percentage of the company's net earnings above a certain amount to go to the city and the status of the unpaid mill tax, now about $3,000,000 with interest. Working out the details for the new ordinance is largely in charge of Stanley Clarke, attorney for the reorganization committee, and C. E. Smith. When the disputed points are finally disposed of the ordinance will go to Mayor Miller for his approval or changes before the final draft for the Board of Aldermen is written.

Broadcasting by Baltimore Company Talent a Great Success

Three musical organizations composed of employees of the United Railways & Electric Company, Baltimore, Md., gave an excellent radio concert from the studio of Station WCAP, Washington, on June 29. Although the organizations have given public concerts and have rendered programs through the smaller radio stations it was the first time they have appeared via air over a superpower station.

The program started at 8:05 p.m., and continued until 9:30. Its rendition was a marked success from beginning to end. There was some interference due to static, but it was not sufficient seriously to harm the program.

John P. Tingle, secretary to President Charles D. Emmons, directed both choruses. It was Mr. Tingle and not President Emmons who appeared in the illustration which accompanied the announcement of the broadcasting made in the ELECTRIC RAILWAY JOURNAL for June 27, page 1025.

During the evening W. Dwight Burroughs, publicity director of the company, announced to the listeners that an attractive souvenir program containing the program and pictures of the three musical organizations had been issued and would be sent to all who requested it. Since the concert many requests have been received and the company also has received many messages commending the musical bodies for the excellent program rendered.

Buffalo Dynamite Issue Before Special Term of Court

Twenty-two officers and members of the Amalgamated Association entered pleas of not guilty in United States District Court at Buffalo before Federal Judge John R. Hazel to new indictments charging them with conspiracy in connection with the dynamiting of the Buffalo-Niagara Falls high-speed line train of the International Railway at Elwood station during the strike of 1921.

Another investigation into the dynamite outrage was started by District Attorney Guy B. Moore, the Erie County state prosecutor, on the day of the arraignment of the prisoners in federal court. Indictments charging various state offenses will be sought against the union officers and members, several of whom already have been convicted and sentenced in United States court in connection with the dynamiting and wrecking of the International Railway's property and killing of passengers during the strike four years ago.

As a result of this prolonged investigation, secret investigators have become closely allied with officers of the Amalgamated and when sufficient evidence was obtained the case was again presented to the United States grand jury at Rochester for new indictments.

The court trials of the 22 men now under indictment are expected to be moved at a special term of United States court in Buffalo some time within the next few weeks.

Orders Deferment on Junking Valdosta Property

Judge W. E. Thomas of the Superior Court recently ordered the receiver of the Valdosta Street Railway, Valdosta, Ga., not to junk the railway for the time being in the hope that it can be disposed of as a going concern. The railway shut down several months ago. The idea of the receiver was to sell the property.

In his order Judge Thomas said that the railway interests were privately owned and such private interests should be carefully guarded by the court, particularly as a total loss might result to the owners if the property were dismantled. He referred to the fact that the railway is almost indispensable to the State College for Women and the proposed new Woodrow Wilson College. It was his belief that the city could project its paving on both sides of the track where the track was unpaved and might shift the track to a convenient position in its adjustment with the paving. He said that new interests were negotiating for the purchase of the property with the idea of operating it.

In 1920 C. M. Killian took over the road from the estates of the late Eugene West, Jacksonville, Fla., and the late United States Senator William S. West of Valdosta. Some two years later it was proposed to sell the road again, and it was suggested that a committee should be formed looking toward the organization of a holding company for the property and the buying of stock by as many people as possible. It was said at that time that since the rehabilitation of the property the line had demonstrated its value to the community, but that it had been impossible to operate it at a profit.

Decision on Bus Men's Status Awaited

The arbitration hearing to determine the question of whether bus men of Akron, Ohio, shall be included in the contract between the Northern Ohio Traction & Light Company and the Amalgamated Association, and to determine the wages of trainmen until May 1, 1925, has been concluded. A decision is not expected from the arbitration board, however, until the arbitration hearing to determine the wages of the interurban men in the employ of the same company is completed. A decision in both cases is expected by Aug. 1. The wage scale determined will be retroactive to May 1.

Silver-Tinted Electric Car in Denver

On Monday, May 18, the day before the May election, at which the Denver Tramway Company sought a bus franchise for its auxiliary, the Bus Transportation Company, Inc., the company ran side by side a silver-tinted tramcar and a 29-passenger bus. On the car windows was a large streamer, reading: "Vote for the Bus." "You Need Both of Us."

All the Denver street cars are painted red and this car, No. 831, painted with aluminum, created much interest. The lettering, the car wheels and all iron work were painted black.

The Denver *Post* explains the innovation by saying that the late H. H. Tammen, one of the proprietors of the *Post*, approached Ernest Stenger, receiver of the tramway, when Mr. Stenger took hold, and said:

> Colonel Stenger, I've seen red street cars, green ones, yellow ones, and black ones, but I've never seen a silver street car. Why don't you paint all the Denver cars silver, so that you'll have something that no other street railway system has? It will attract attention and cause comment, and soon people all over the country will know of Denver as the city of silver street cars.

The aluminum may be used on all the cars in Denver because of its beauty, lasting quality, its great opacity and reflectivity. It is said that 70 per cent of all light falling on the surface is reflected and 30 per cent is absorbed. This means cooler cars in the summer months. At night the visibility of a car so painted would be greatly increased.

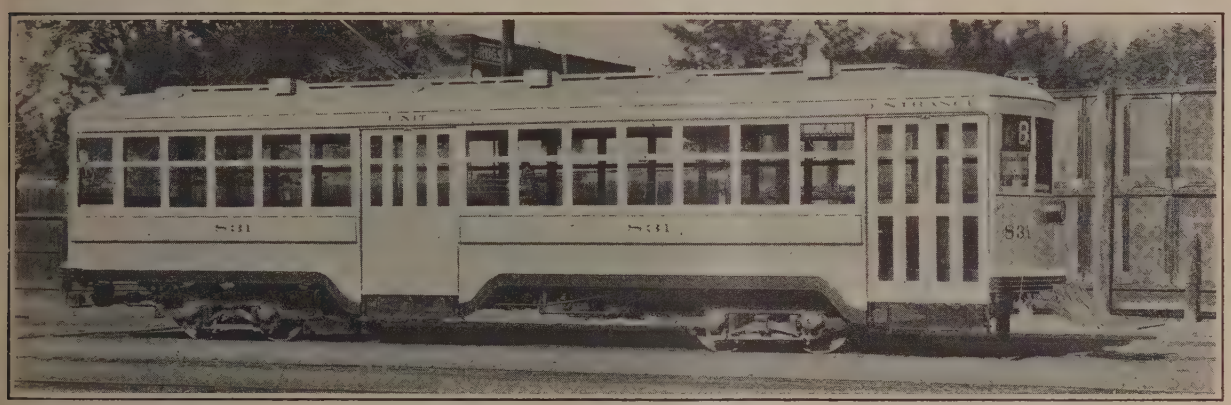
As mentioned in the ELECTRIC RAILWAY JOURNAL for May 23 the Bus Transportation Company, Inc., lost its plea for a franchise by a vote of 16,544 for and 29,936 against. It has not been determined whether or not the matter will be submitted again. Tramway officials are of the opinion that the public jumped to the conclusion that the tramway might take off certain electric lines and substitute buses. This was not the intention at all. It was definitely stated before the election that the plan was to run buses where the cars do not run, and to transfer from buses to cars at junctions and vice versa.

Wages Continue Unchanged in Toledo

A new wage and working agreement between the Community Traction Company, Toledo, and the street car men's union, retroactive to June 1, has been approved by the men and signed by their representatives. The new contract provides for the same rate of wages as last year—50 cents for the first three months, 52 cents for the next nine months and 55 cents thereafter. Five cents additional is granted for operators of one-man cars and buses. The contract covers bus operation, if that form of transportation should be taken up extensively by the company in the current year. From time-and-a-third the overtime rate has been raised to a flat 75 cents an hour. Some other concessions, such as credit for making out accident reports, were also granted to the men.

A reservation is made this year which will permit the men to reopen the wage question upon ten days' notice provided a new transit plan is put into effect by the company which would insure higher wages without immediate effect on fares. The company also is granted the right to reopen consideration of working conditions only on ten days' notice. This is aimed to protect the company is case the city should throw open the door to unrestricted bus competition.

J. Frank Johnson, vice-president and general manager, represented the company and H. Lee Camp, business agent of the local Amalgamated, and his executive committee represented the men.



Denver's Silver-Tinted Car Attracted Attention and Caused Comment

Wages in Connecticut to Be Arbitrated

A formal proposal for arbitration between the trolleymen's union and the Connecticut Company, New Haven, Conn., was drawn up at a recent meeting and adopted. This action followed the refusal of the company to agree to the workers' demands for a wage increase and an adjustment of working conditions. The joint executive board of the trolleymen's union has appointed James H. Vahey of Boston to arbitrate for the union, while the Connecticut Company has appointed Joseph Berry of Hartford. These two will select a third party to make up the arbitrating committee.

Protest Increased Fares in Oakland

The request of the Key System Transit Company to the California Railroad Commission for permission to raise its railway and ferry rates has stirred a storm of protest in East Bay cities. Mass meetings have been called, condemnatory resolutions passed and the Mayor of Oakland is out with a statement hotly assailing the Key System and flaying its motives in asking for the increased fares. On its part the Key System has started a campaign of education with the slogan "Better Service at Reasonable Cost."

The cities of Alameda and Berkeley are going ahead with plans for additional service that will give the Key System competition. Alameda is seeking the establishment of an auto ferry to San Francisco. The City Council has been asked to consider this matter and will do so at an early meeting. Berkeley is making plans for the establishment of a new ferry connecting the city with San Francisco and Sausalito. In addition these two cities are fighting the present 18-cent ferry rate to San Francisco charged by the Key and Southern Pacific ferries. This fare is called a "war rate" that should be repealed.

Mayor John L. Davie of Oakland has assailed the request for higher fares as a "grab" at profits. He has asked a thorough probe of the "high finance methods employed by the Key in its reorganization." The higher officials of the line are alluded to as "selfish and alien interests."

Change in Interurban Time-Table Widely Advertised

The Washington, Baltimore & Annapolis Electric Railroad put a new schedule into effect on Sunday, July 12, and the change was made practically without protest on the part of any of the patrons of the system. The company has reduced the running time between Baltimore and Washington by five minutes. The schedule affects the entire system, including both the North and South Shore branches, which operate between Baltimore and Annapolis.

There probably was not a patron who did not know of the change in advance. If anyone failed to learn of it, it was through no fault of the company. The actual schedule was not made public until a few days before the changes were effective, but in that short time the company conducted an energetic campaign which had the desired results. Advertised notices appeared in all the newspapers about the change and the public was urged to get copies of the time-table at any one of the terminals. Large posters were placed in all the cars and at every station along the entire system.

In addition to all this the conductors of all the cars were called upon to bring the changes to the attention of the public. They were provided with small printed cards reading "General Change of Time-Table. Effective July 12, 1925. Ask Ticket Agent for Schedule. Washington, Baltimore & Annapolis Electric Railroad."

These cards were handed to passengers before the change became effective.

Wages Unchanged in Little Rock

Trainmen of the Arkansas Central Power Company, Little Rock, Ark., will continue to work under the present scale of wages, according to a ruling made by the arbitration board recently. The same hours also will be maintained. The present scale is 56 cents an hour for one-man operation.

The hearing on the wages question began on July 1 before a committee of three attorneys and was continued for ten days. The company had asked for a decrease in the wages of 15 per cent. A counter demand by the employees was made for an increase of 9 cents an hour. The employees had also asked for an eight-hour day with time and a half for overtime. The maximum rate for two-man service is 51 cents. The men wanted a differential of 14 cents between one-man and two-man service.

Evidence on Fare Increase in East St. Louis Postponed

The Illinois Commerce Commission has postponed indefinitely the taking of further evidence in the application of the East St. Louis & Suburban Railway for permission to increase the basic rate of fares in East St. Louis. The postponement in the case was taken when Edgar P. Holly, counsel for the city of East St. Louis, asked for time in which to study the various reports and statistics compiled by the company and introduced in support of its application. The company proposes to sell tokens four for 30 cents instead of two for 15 cents and to charge a 10-cent cash fare instead of 8 cents.

W. H. Sawyer, president of the company, testified that he anticipated the increase would net the company $39,612 additional revenue annually without working any injury on the regular car rider. He presented figures to show that 90 per cent of the car riders use tokens and that of the 13,243,714 passengers last year only 965,116 were local cash fares.

Philadelphia Will Continue in Fare Case

The city of Philadelphia, Pa., will continue in the Philadelphia Rapid Transit Company fare case so that all facts may be laid before the Public Service Commission for a fair and just determination. This announcement was recently made by Mayor Kendrick after a conference with City Solicitor Gaffney and following the action of the Philadelphia Chamber of Commerce, the Philadelphia Real Estate Board and the Operative Builders, all of which had urged that the P.R.T. be allowed to maintain its present revenues to insure extensions contemplated. The hearing before the Public Service Commission will be resumed on July 22.

J. Rowland Bibbins, Washington, engaged by the city to study the company's system of operating and accounting, said that his staff will have completed its work by the time the hearings are resumed.

News Notes

Canadian City Renews Franchise.—The City Council of St. Catherines, Ont., on July 8, approved an agreement with the Canadian National Railways for a renewal of its local franchise and an increase in fare to 7 cents on the city lines.

Safety Surveys in Three Cities.—The National Safety Council will make a community safety survey this summer in Baltimore, Philadelphia and Boston. These research studies are made to determine the essential activities and conditions that have an effect upon traffic safety. The three cities selected have been chosen as having favorable records as a basis for study.

Co-Ordinated Service Arranged.—The Illinois Power & Light Corporation which controls the Illinois Traction System (the McKinley Line), has arranged to co-ordinate bus and electric railway service in Granite City, Ill. Opposition to the proposed bus lines was removed at a hearing held before Commissioner Clark of the Illinois Commerce Commission when John G. Little of St. Louis, who had been granted a city franchise to operate buses in Granite City, withdrew from the field in favor of the Illinois Power & Light Corporation. Commissioner Clark stated that the commission would act on the company's application for a certificate of convenience at once.

Weekly Pass to Be Tried.—The $1 weekly transferable pass was put into effect by the Steubenville, East Liverpool & Beaver Valley Traction Company in Wellsville, Ohio, recently

Railway and Bus Franchise Approved.—Two franchises, providing for bus and car lines that will cost the Portland Electric Power Company, Portland, Ore., $225,000, have been approved by the City Council and the ordinances ordered published. All lines will be in operation by the end of the summer, F. I. Fuller, vice-president of the company, states. Fourteen buses will be provided to operate over four lines to serve parts of the city that now have little or no transportation service, and a new car line will be built to St. Johns by way of the Greeley cut-off. The buses will cost $100,000 and the short line to St. Johns will cost $125,000. Bus lines will be established as feeders to railway lines in several districts, with transfer privileges between the two.

Denies Fare Petition.—The Missouri Public Service Commission recently denied the application of residents of Brentwood, St. Louis County, for a 7-cent fare to Fourth and Market Streets, St. Louis. Two fares of 7 cents each are now charged for the trip by the United Railways. The commission held that traffic on the line did not justify the 50 per cent cut in the rate of fare.

Fare Increase Denied.—Commissioners at Fort Smith, Ark., denied the right to the Fort Smith Light & Traction Company to increase its fares from

7 to 8 cents, cash, or 7½ cents on tokens. It was recommended to the State Railroad Commission that an interurban fare of 3 cents, in addition to the fare of 7 cents, be granted between Fort Smith and Van Buren, making a total interurban fare of 10 cents plus bridge fare. The company was also denied the right to abandon four blocks of line on Greenwood Avenue. It was suggested that the company bring to the commission a complete plan for reorganization of its railway, including probable substitution of bus lines on some streets for street cars.

Sunday Tickets Sold.—The Trenton & Mercer County Traction Corporation, Trenton, N. J., is selling a 25-cent unlimited ride ticket good only on Sunday which entitles the holder to a ride in any of the first 8-cent zones.

Explains Fare Status.—George Kidd, president of the British Columbia Electric Railway, recently answered the question of the Vancouver City Council as to whether it did not consider the time ripe to revert to the 5-cent fare by stating that he had a good case for increasing it above the present 6-cent rate. Mr. Kidd pointed out that with a few exceptions the British Columbia Electric Railway had the most onerous agreement with its railway employees, both as regards wages and working conditions, of any public utility in Canada. He said that the company was not making a fair return on its capital and had never made a fair return since the 6-cent fare was introduced, that the increased gross earnings, due to the city's growth during the last two or three years, had been offset by the increased service provided by the company—recently the company spent $250,000 on new rolling stock. In view of this attitude fare negotiations have been shelved for the time being.

Will Co-operate with City Officials.—As a method of co-operating with city departments in their study of the traffic situation in Fort Wayne, Ind., the Indiana Service Corporation has selected a number of its oldest and most reliable employees to study the situation from the operator's point of view. These men will report breaches in traffic rules to the traffic bureau of the Police Department.

Railway Offers Help. — Assistance was promptly offered by the Los Angeles Railway to the Santa Barbara & Suburban Railway, Santa Barbara, Cal., when its service was crippled, due to the recent earthquake. The Los Angeles company sent its No. 1 bus, a Moreland single-decker, to help in the transportation of the public.

Men Accept Compromise Offer.—A threatened strike of employees of the Cedar Rapids & Marion City Railway, Marion City, Iowa, over the wage scale was averted recently when the men accepted the compromise offer of a 2½-cent an hour increase. Under this agreement the men will receive a maximum of 52½ cents an hour. They had asked for a 5-cent increase. The agreement also stipulates that if the increased fare rates produce the anticipated revenue another increase of 2½ cents will be paid Jan. 1, 1926. The company had asked for a three-month test of the new fares before entering a wage discussion.

Recent Bus Developments

Bus Manufacturer on Place of that Vehicle

Alfred P. Sloan, Jr., president of the General Motors Corporation, has been putting himself on record on the question:

"What does the tremendous development in the use of the motor bus add to the convenience and efficiency of our people?"

In order to do so Mr. Sloan has prepared an analysis of the motor transportation system which is appearing in the current issue of the *Spur*. Mr. Sloan points out that the motor vehicle has become a real necessity in our every day life and declares that no development of modern science has contributed more toward the advancement of mankind. He discusses both the bus and the truck. The following extract of his remarks about the bus, it is believed, summarizes his point of view correctly:

> Let us deal first with the motor bus—the passenger carrier. It is safe to say that the electric railways have found it to be a powerful ally as a supplement to and even in certain cases a substitute for the trolley car. In other words, according to Lucius Storrs, managing director of the American Electric Railway Association: "The bus is here to stay, old methods of playing with shifty politicians are gone, and the public will be fair if it gets service and is told the truth. That the bus is going to supplant electric railways is a ridiculous assertion. That we can utilize it as a part of our service is true. Within the next few years bus transportation will be conducted on a scientific, profitable and properly controlled basis and electric railway companies will be operating the greater part of the bus service."
>
> To show that the electric railways are in earnest about using this new transportation tool, I would point out that in January, 1923, there were 58 electric lines using 354 buses on 875 miles of route, whereas at the beginning of this year 159 electric lines were using 2,482 buses on 2,933 miles of route, or an increase in bus use in this field within two years of 175 per cent in lines operating buses, of 235 per cent in miles of route and 600 per cent in the number of vehicles in use.
>
> The bus is essential to the electric railway as a feeder, an auxiliary on coordinated branches covering city, suburban, interurban, city and suburban, city and interurban and city, suburban and interurban services. In several cases buses have been substituted for trolley cars on certain lines or in some territories. Electric railway officials as a whole take a constructive view of this matter judging from the rapidity with which they are establishing motor bus lines, feeling, no doubt, that in this way they will have available a combination of facilities with which they can give the traveling public exactly what it wants and maintain the good will of the communities served.
>
> That the possibilities for expanding the field of the motor bus are almost unlimited is evidenced by consideration of the fact that in London the bus carried 1,250,000,000 passengers last year; in Paris, 336,000,000; Chicago, 96,000,000; New York, 11,000,000; in other large cities in like proportion, and in the United States as a whole it is estimated that 50,000 buses carried 2,500,000,000 passengers, and we are only at the beginning.

Mr. Sloan said that efficient transportation and communication is a vital economic necessity in the development and progress of any country. The motor vehicle—truck, bus and automobile—within a single generation has come to play a leading and important part in our every day lives, and while it has been accepted, the motor vehicle has as yet not been used intensively. According to him, the time has come when we are forced to stop and consider how properly to control this new and powerful transportation machine; its field is unending, its adaptability unlimited, providing scientific methods are used. In conclusion, Mr. Sloan said that deliberate consideration by those fitted to deal with the problem plus the hearty co-operation of all concerned will find the answer.

Buses Now Operate on West Side of Connecticut River

With the withdrawal of cars by the Hartford & Springfield Street Railway between Windsor and Windsor Locks all railway service by that company on the west side of the Connecticut River ceased. Traffic is handled by the through buses running hourly between Hartford and Springfield, except that a new bus run has been instituted, leaving Windsor Locks for Windsor at 5.45 o'clock in the morning, to accommodate workingmen previously dependent on the railway. The fare between Windsor and Windsor Locks is 20 cents, the same as it was on the railway, but the reciprocal free ride privilege for 1½ miles below Windsor is abolished. This entails an additional expenditure of 3 cents in riding to Hartford, but in compensation the running time is cut to fifteen minutes.

This is one of three bus routes maintained by the company. The second is the east side route from Hartford to Springfield, and the third is a route from Springfield to Somers.

Hamilton Company Plans Bus-Airplane Ride

The Southern Ohio Public Service Company, Hamilton, Ohio, is planning an unusual service for its patrons. As soon as details are worked out provision will be made for a joint bus and airplane trip to Buckeye Lake. The plan will make it possible for a patron to travel by bus from the heart of the city to the aviation field and proceed thence by plane to the lake. The entire trip will take 30 minutes.

Michigan Company Plans Supplementary Service

The Michigan Electric Railway, Jackson, Mich., through its subsidiary, the Southern Michigan Transportation Company, has petitioned the State Utilities Commission for permission to parallel its interurban railway tracks with bus lines. Governor Groesbeck recently vetoed a bill which would have authorized steam and electric railways to supplement their service with bus lines. It was understood at that time that the commission would, however, authorize supplementary motor lines wherever practicable.

Hattiesburg Votes for Bus

By a vote of the people taken on June 30 buses will replace the railway cars of the Hattiesburg Traction Company, Hattiesburg, Miss.

Regarding the proposed change in the ordinance and the substitution of buses for cars, Mayor Moore and Commissioners Estes and McAulay made a statement to the effect that the transportation problem had been investigated from the standpoint of giving Hattiesburg a modern system, making that system conform to the good roads building program and overcoming the losses from operation of the street cars. Further, the conclusion was unanimously reached that the substitution of buses for the present street cars was the only method of accomplishing any one or all of these things.

In part the statement follows:

The Mississippi Power Company, the owner of the traction company, has been very frank with us. From the company's records we know that it has been losing money on the street cars.

The substitution of buses for street cars is merely changing from one form of transportation to another; a modern system for an antiquated system; a losing proposition for one under which the company feels it can at least break even.

In voting to substitute buses for the cars, the city has surrendered no rights to regulate the buses. It retains the same rights to regulate them it has heretofore enjoyed to regulate the street cars. And to make assurance doubly sure, the city required the traction company to enter into a contract conceding the city's right to regulate the buses in the same manner it has heretofore regulated the street cars. In this way, and under the law and the provisions of the traction company's franchises, the rights of the city and of the people are fully protected.

In addition, the traction company estimates it would cost $40,000 to make its tracks conform to the street paving program and to pave between its rails. It states it cannot stand this expense in view of the fact that the cars are losing money already.

Two of the buses have already arrived and have been demonstrated to the public by officials of the company. A fleet of five was expected early in July. Each will seat 21 passengers.

Hydro Commission to Run Buses

With the Peterborough Radial Railway, Peterborough, Ont., showing a deficit, the Ontario Hydro Commission, which is operating the system, proposes a bus service to meet public demands and build up revenue. In commenting on the matter the *Canadian Financial Post* said:

Evidently the Hydro is coming to realize that radial railways have a real competitor in the bus. It is only a couple of years ago, however, that the Hydro did its best to plunge the province into a program of radial building that was estimated eventually to involve a couple of hundred million dollars.

Ontario taxpayers can thank the Drury government for one thing at least—it had the courage to appoint the Sutherland Commission, which exposed the ridiculous unsoundness of the Hydro radial railway project.

Duplication of Service Disallowed

The Public Service Commission of New Hampshire recently refused the petition of the Checker Cab Company to operate a bus line between Manchester and Hampton Beach. The commission stated that the undisputed evidence in the case was that the Exeter, Hampton & Amesbury Street Railway and the Boston & Maine steam line serve the territory between Manchester and Hampton Beach, and while the evidence was rather vague as to the amount of patronage, it was very convincing that neither the street railway nor the steam line could afford to be deprived of any revenue that it is now enjoying. It was further brought out that the electric railway had incurred an operating deficit of $41,883, which had been made up from the public funds of the towns of Hampton, Exeter, Hampton Falls and Seabrook.

Duval Law Held Unconstitutional

The Supreme Court of California has upheld the decision of a lower court declaring the Duval law unconstitutional. Under this law bus lines have been taxed 4 per cent of their gross earnings for about two years. The courts held that the law conflicted with the provisions of the California constitution prohibiting the granting of privileges or immunities to specific citizens which are not granted to all citizens. The law violated this provision by exempting from the tax taxicabs, drays, transfer vehicles and other light city motor vehicles which do not run over regular routes, hotel buses and sightseeing motor vehicles. The court held that exemption of sightseeing buses and buses earning more than 15 per cent of their gross receipts by carrying mail was particularly in violation of the constitution.

The State Supreme Court further ruled that it was impossible to save the act by simply eliminating the objectionable clauses, because these are so interwoven with other portions of the statute that their elimination would amount to no less than an amendment to the statute—purely a legislative prerogative. A bill by the same author, which would increase the tax on gross earnings to 4½ per cent, has been passed by the Legislature and is in the hands of the Governor. Other provisions of the bill are practically the same as those of the law declared unconstitutional. The opinion is that if this measure is signed it will share the fate of the previous bill. At the last session the Legislature also approved an amendment to the constitution which would provide a gross profit tax of 4½ per cent. This will be submitted to the people for ratification at the next general election.

Will Vote on Substituting Buses.—The voters of Meridian, Miss., during the week of July 19 will decide whether the Meridian Light & Railway Company will be permitted to substitute buses for its cars.

Buses Succeed Cars.—The Iowa Southern Utilities Company recently ceased to operate 1½ miles of railway in Centerville. Iowa, and purchased three Graham Brothers city-type buses, two of which are run daily, the third being held as a spare.

Will Abandon Lines.—It is reported that the Carolina Power & Light Company, Raleigh, N. C., will discontinue its auxiliary bus service which has been operating through Hayes-Barton and Mordecai. John V. Strange, operating manager, is reported to have said that for seven months of operation the revenue has been sufficient to meet only 75 per cent of the wages of the bus drivers. Investigations are now being made by the company to make the buses of greater service.

Seeks Permission for Extended Operation.—The Eastern Massachusetts Street Railway has applied to the Rhode Island Public Utilities Commission for authority to operate three 31-passenger buses between Fall River, Mass., and Newport, R. I.

Asks Authority to Operate Buses.—The Burlington County Transit Company, Hainesport, N. J., has asked permission of the Northampton Township committee to operate buses on the streets now occupied by its tracks, in addition to the trolley cars.

Franchise to Operated Presented.—The Illinois Power & Light Corporation has presented to the Danville, Ill., City Council a franchise for permission to operate buses over certain streets for a ten-year period. The corporation has made a similar petition to the Illinois Commerce Commission.

Railway Plans Bus Lines.—The New York, New Haven & Hartford Railroad applied recently to the Department of Public Utilities for permits to operate seven bus line routes in Massachusetts. Trustees of the Eastern Massachusetts Street Railway filed objections.

Service Between New Haven and New London.—The New Haven & Shore Line Railway, Guilford, Conn., is running two-hour service between New London and New Haven, a distance of 58 miles, at a fare of $2.10, and hourly service from New London to Flanders with a bus feeding the various beaches. The railway bought the bus line between Lyme and New London, including two Fageol buses of the street-car type, one International and two smaller buses.

Seeks Permit in Unserved Section.—The St. Louis Bus Company, a subsidiary of the United Railways, St. Louis, Mo., has applied to the St. Louis Board of Public Service for a permit to operate a bus line in the territory south of Carondelet Park, now largely without transportation facilities. The proposed line would connect with a car line and with buses on the Morganford-Delor-Kingshighway route.

Sixteen-Mile Bus Line Proposed.—The Syracuse Railway Co-ordinated Bus Lines, Inc., a subsidiary of the New York State Railways, has applied to authorities of several towns for permission to operate a bus line between Syracuse and Chittenango, a distance of 16 miles.

Bus Line Run to Chevy Chase Circle.—The Capital Traction Company, Washington, D. C., has been authorized to operate a bus in the vicinity of Chevy Chase Circle, beginning at Connecticut Avenue and McKinley Street, N. W., north to Chevy Chase Circle. The return route is by Forty-first Street, Belt Road and McKinley Street to Connecticut Avenue. The rate of fare will be the same as the current rate of fare on railway lines, except that transfers between the buses of the line and the cars of the Capital Traction Company will be sold at the rate of 2 cents each. The commission is of the opinion that the transportation is needed.

Financial and Corporate

Receiver's Plan Blocked

Court Objects to Proposal to Sell Bonds Now in Escrow to Pay Receiver's Certificates

Plans looking to a reorganization of the United Railways, St. Louis, Mo., received a setback on July 7 when United States District Judge Faris denied the application of Receiver Rolla Wells for permission to take from the St. Louis Union Trust Company $4,200,000 of the general first mortgage 4 per cent bonds now held in escrow and use the proceeds from the sale of the bonds to pay off an equal amount of receiver's certificates.

Judge Faris also denied the receiver an extension of time for the payment of outstanding underlying bonds as follows: Lindell Railroad, $1,474,000; Compton Heights line, $986,000; Cass Avenue line, $1,640,000. All these bonds are now past due and in default.

Under the plans of the reorganization committee arrangements had been made to sell $8,300,000 of the first general mortgage bonds to raise the funds needed to pay off the receiver's certificates and the underlying bond issues now due.

Financial interests had agreed to pay par for the general mortgage bonds, although the current market prices are 70½ bid and 71 asked. The committee representing the bondholders and the St. Louis Union Trust Company objected to taking the bonds on the ground that they could not be used to pay off the receiver's certificates.

The total issue of general mortgage bonds is $42,000,000, of which $32,232,000 has been issued. The remaining $9,968,000 is held in escrow by the St. Louis Union Trust Company. It is provided that additional bonds shall be issued whenever certain issues of underlying bonds fall due. Some time ago when bonds of the Broadway and Union lines fell due it was decided to issue receiver's certificates to take up these bonds rather than to attempt to sell general mortgage bonds, so unfavorable was the state of the money market at that time.

In reply to a motion for instructions filed by Receiver Wells, in which the plan of the reorganization committee to take $8,300,000 of the general mortgage bonds from escrow was detailed, Judge Faris said that the law did not authorize the court to instruct Receiver Wells to use any property which was not and had not been in the receiver's hands. Therefore, he could not authorize the receiver to sell bonds which had never been issued and which are in possession of the St. Louis Union Trust Company.

Judge Faris made it clear that he was not attempting to pass on the merits of the plan of reorganization proposed. He held the matter had not been presented in the proper way.

Col. Albert T. Perkins, general manager for Receiver Rolla Wells, stated that the payment of the receiver's certificates and underlying bonds that have matured was vital to the reorganization plan, but that he was not in a position to say what would be the next move of the reorganization committee. It will be possible to pay the receiver's certificates with surplus funds now on hand, but to do this would take working capital the reorganization committee has been planning to use.

Charles W. Bates, counsel for Receiver Wells, in commenting on Judge Faris' decision said:

> The committee's plan was to substitute a 4 per cent obligation for one which now carries 6 and 8 per cent. The reorganization committee, I understood, had raised or was raising the money to purchase the new bonds at par and pay the interest on them. How long they will be able to keep the money at their disposal, while it is sought to bring this to pass in some other manner, I do not know.
>
> The receiver's application to the court was made because of a desire to co-operate with the reorganization committee. It seemed to us to be in the interest of the bondholders, the stockholders and the public.

The present capitalization of the United Railways is $41,296,000 common and preferred stock. The funded debt totals $54,890,000.

Cut in Funded Debt Proposed

The reorganization contemplates a cut in the funded debt to $40,800,000 and plans to issue 53,845 shares of 7 per cent preferred stock and 343,645 shares of no par value common stock.

It is proposed to raise the $14,195,562 needed in the reorganization by selling $6,000,000 first and refunding gold bonds and 343,645 shares of new common stock to bondholders and stockholders at $12.50 a share. This, with the $4,500,000 surplus cash now in the hands of the receiver, would raise the needed amount.

Receipts in Indianapolis Lower

Passenger receipts of the Indianapolis Street Railway, Indianapolis, Ind., for June were $32,296 less than May receipts. Total receipts last month were $387,132. Receipts for last month also were $29,856 less than receipts during a similar month last year.

Discontinuance of Alabama Lines Sought

The Alabama Power Company filed a petition with the Alabama Public Service Commission at Montgomery, Ala., on July 9 asking authority to discontinue railway service at Florence, Sheffield and Tuscumbia, Ala., and to substitute bus transportation. In another petition, filed on the same date, the company sought permission to discontinue railway service at Huntsville, without proposing to substitute any other method of transportation. A hearing has been docketed in Montgomery for Sept. 8.

Smaller Net in Grand Rapids

Company Going After Business Intensively with a New Type of Cars and with Buses

Net income of the Grand Rapids Railway, Grand Rapids, Mich., for the year ended Dec. 31, 1924, was $45,427, compared with $64,674 for the previous year. Details of the earnings and expenses of the company as contained in the pamphlet report of the company dated June 30, 1925, and just made available for publication follow:

STATEMENT OF EARNINGS OF GRAND RAPIDS RAILWAY

	1924	1923
Gross Earnings:		
Passenger revenue	$1,719,562	$1,754,300
Revenue from special cars, etc.	2,132	1,604
Rent of equipment, tracks, etc.	38,794	54,979
Non-operating revenue	10,843	6,723
Total	$1,771,332	$1,817,606
Operating Expenses and Taxes		
Operating expenses	$1,099,175	$1,121,186
Taxes	137,542	135,963
Total	$1,236,717	$1,257,149
Gross income available for fixed charges, retirements and dividends	$534,615	$560,457
Interest on funded debt	261,950	222,000
Other fixed charges, including amortization of debt discount	82,768	102,086
Provision for retirements	144,459	171,696
Total interest, other fixed charges and retirements	$489,187	$495,783
Net income	45,427	64,674
Ratio of operating expenses to gross earnings	62.43%	61.91%
Ratio of operating expenses and taxes to gross earnings	69.82%	69.16%

A review of the report indicates that the company has begun a program to equip the property for active solicitation of increased transportation business. As has been indicated previously in detail in the ELECTRIC RAILWAY JOURNAL the most important feature of this program will be the adoption of a new type and design of electric street cars—the first of their kind in the United States. As a result of the destruction by fire of a large part of the company's rolling stock in July, 1924, the management decided before ordering the new equipment to conduct experiments in the field of light-weight and more convenient street cars. So three of the largest manufacturers of street railway cars in the United States built specially designed cars, embodying innovations which are a distinct departure from previous design and construction.

Expenditures of $224,601 for additions and improvements to property during the year included cut-off and rerouting work to improve traffic conditions, in line with the comprehensive survey being worked out with the City Planning Commission. Loading platforms and safety zones were provided in the downtown district for the speeding up of transportation service. The capital outlays, averaging $222,500 annually for the past five years, are placing the company in a sound position to attract business in line with the program under way.

During the year the company operated eight buses on four different routes in various sections of the city. One route was a through line downtown and the three other routes were extensions of present street car lines.

Free transfers are exchanged between the buses and street cars and it is the intention of the management to extend this service to other parts of the city where it is not advisable to extend the car lines.

At the beginning of 1925 the rates of fare in effect were 10 cents cash or seven tickets for 50 cents. These rates were not sufficient to produce the return to which the company was entitled under the terms of its franchise, which is of the service-at-cost type, and effective Feb. 1, 1924, the ticket fare was increased to six tickets for 50 cents.

Court Passes Upon Denver Claims

The reorganization plans of the Denver Tramway are not as yet complete. At least they have not been stipulated in such manner as to satisfy all the unsecured creditors. For this reason Judge Robert E. Lewis in the Federal District Court at Denver has put off passing upon the reorganization so that the company may be taken out of the hands of the receiver.

About $160,000 is due unsecured creditors. Of this amount $18,796 is claimed by "Black Jack" Jerome, strike breaker. He, along with others, refuses to accept the 33⅓ cents on the dollar. Samuel O. Crump, who represents $80,000 of unsecured claims, sees no justification for such an offer and opposes it.

At first there was much speculation as to when Judge Lewis would reopen the case. This he did the latter part of June and then, with claims aggregating $149,517, he ruled as to classification. In the first class he placed labor, cost of material and supplies, bills contracted as early as July, 1920, and then the claims of "Black Jack" Jerome. His bill is $18,796.87; the Westinghouse Electric Company $18,695.74, the others bringing the total up to $49,706.54. Franchise taxes amounting to $20,000, due to the city, are in the second class, subordinate to mortgage liens against the company, but with priority over the claims of general and unsecured creditors. Interest on the claims was placed at 8 per cent, only in the event that the funds are available.

Fifty-nine claims for personal injury and property injury amounting to $7,375 were listed in the third class. In this connection, the court disallowed all damage claims that are not properly substantiated and the contestants referred back to Receiver Stenger so that an agreement might be had within twenty days.

The objection of the creditors to the proposed reorganization plans caused a postponement of the final decision. With this amicably settled, the best seems assured.

Madison Road Does Well

More than Holds Its Own Under Adverse Conditions—Operating Statement

Evidence is afforded in the operation of the Madison Railways, Madison, Wis., which shows the ability of good management to meet changing conditions and keep in step with all advances in the art of modern transportation. On May 1, 1916, the date of the company's last refinancing, it issued and sold to bankers $1,000,000 par value of first mortgage bonds and debenture notes carrying a total interest charge of $54,000. At the present time the amount of bonds and notes outstanding is $1,005,500, an increase in nine years of $5,500, with a total interest charge of only $52,000. In the same period of time the company has spent, from earnings and sales of stock, more than $400,000 in additions properly chargeable to capital account and has spent more than $20,000 in a detailed valuation of its properties by expert engineers, showing the total reproduction value to be in excess of $2,100,000.

The company has also ordered twelve additional new one-man cars of an improved type, six of which will be put in service this month and six later in the season, with a resultant saving in operating cost of approximately $30,000 a year. In addition, it has lately purchased and now has in auxiliary service six motor coaches of the latest type.

A comparative statement of the earnings of the company covering a period of four calendar years and one fiscal year follows:

	1921	1922	1923	1924	Year Ended April 1, 1925
Receipts	$411,697	$419,462	$417,602	$417,016	$407,201
Expenses and taxes	297,040	303,463	296,723	305,713	295,132
	$114,657	$115,999	$120,879	$111,303	$112,069
Interest on bonds	43,875	43,875	44,702	44,732	45,625
	$ 70,782	$ 72,124	$ 76,177	$ 66,571	$ 66,444
Interest on notes	16,875	16,715	11,440	7,070	6,737
	$ 53,907	$ 55,409	$ 64,737	$ 59,501	$ 59,707

The company is discussing these things in a letter which it is sending to its stockholders. Not part of that record, but of great interest nevertheless, is the fact that every employee of the company is a stockholder, a record believed to be more favorable than that made by any other purely street railway in the country.

F. W. Montgomery, president of the company, said to stockholders:

> Higher fares, the larger use of light weight, one-man cars, better shop co-ordination and the employment of buses in auxiliary service are putting the industry on a more substantial footing and in position to meet successfully any form of urban competition in transportation.
>
> Added to all this, we have the continued handing down of federal court decisions relating to the valuation of public utilities, asserting that "present value expressed in terms of present money" must be the lawful rate base and that street railways are entitled to earn not less than 8 per cent on such base.
>
> We believe that holders of street railway securities and utility companies generally need have no fear as to the safety of their investment, especially where the company, as in our case, is operating under an indeterminate permit granted by the state and is working in harmony with the constituted local and state authorities in the solution of our problems.

The Madison Railways operates 19 miles of line in a town of 45,000 inhabitants.

Canadian Utility Property Changes Hands

Nesbitt, Thompson & Company, Toronto, Ont., investment bankers who specialize in placing public utility securities, have secured control of the Dominion Power & Transmission Company, Hamilton, which controls the Hamilton Cataract Power, Light & Traction Company, in which it owns a 99 per cent interest, and also the Hamilton Electric Light & Power Company, the Hamilton Street Railway, Ltd., Hamilton & Dundas Street Railway, Hamilton Radial Electric Railway, Hamilton, Beamsville & Grimsby Electric Railway, Brantford & Hamilton Electric Railway, Hamilton Terminal Company, Ltd., Dundas Electric Company, Ltd., Lincoln Electric Company, Ltd., and Western Counties Electric Company Ltd. It is planned to include this concern in the Power Corporation of Canada, Ltd. The Dominion Power Company develops hydropower at Decew Falls, Ontario. It serves Hamilton, Brantford and St. Catherines.

Hearings in Baltimore Adjourned —Survey Planned

Testimony in the hearing held by the Maryland Public Service Commission to determine the value of the property of the United Railways & Electric Company, Baltimore, practically ended during the week of July 6. Following the testimony of two company witnesses this week the plan is to adjourn the hearing until Aug. 11, when arguments will be heard by the commission. In the meantime, however, it is also planned to conduct a hearing on the protests that have been filed against the operation of one-man cars by the United.

Growing out of these hearings to determine the value of the property of the United Railways & Electric Company steps have been taken to make a comprehensive survey of Baltimore with the view of rerouting the street car lines and also dealing with vehicular traffic. During the valuation hearing Clarence W. Miles, people's counsel, urged that such a study be made and his suggestion was concurred in by officials of the railway, state and city. As a result of the proposal a meeting was held in the offices of the Public Service Commission on July 10. This was attended by members of the commission, Charles D. Emmons, president of the United, and others.

The committee which will handle the subject, and which probably will be headed by Mr. Miles as chairman, will include representatives of the railway, the state and the city. Soon after the meeting Gov. Albert C. Ritchie announced the appointment of Police Commissioner Gaither as the state's representative. Mr. Gaither has been at the head of the police department for several years and has given the traffic problem considerable study.

The question of engaging an expert to make the necessary survey of the city will be discussed at the next meeting of the committee. Changes made or suggested in the past in regard to rerouting car lines in the downtown area generally have brought about many protests from merchants and others. This was cited at the meeting, at which preliminary plans for the survey were discussed, and it was pointed out that no doubt the situation would be helped in this regard by engaging an outside expert to make the survey and recommendations.

Court Urges Lifting of Receivership

Judge Allyn L. Brown of the Superior Court at Hartford, Conn., has recommended the termination of the receivership of the Hartford & Springfield Street Railway, Warehouse Point, Conn. As a result, Francis R. Cooley, chairman of the bondholders' committee, announced on July 13 that the holders of bonds would be notified immediately and that the corporation chartered by the last Legislature, the Hartford & Springfield Transportation Company, would probably be "ready to do business" in the interest of the bondholders following foreclosure. Steps are being taken for the foreclosure of the bondholders' mortage on the property and notification has been made to have bonds deposited with the committee.

The Hartford & Springfield Street Railway owns the railway from Windsor into the town of Suffield on the west side of the Connecticut River, and from South Windsor to the Massachusetts line on the east side, with a branch from Enfield to Somers and one from Warehouse Point to Rockville. It operates into Springfield over the lines of the Springfield Street Railway and into Hartford over the lines of the Connecticut Company. It also runs buses between the cities.

Foreclosure Ahead for Detroit United

In a letter to creditors of the Detroit United Railway, Detroit, Mich., the receivers state that foreclosure of mortgages securing defaulted issues, interest on which was due and unpaid July 1, will be begun at once.

Interest on the 4½ per cent first consolidated mortgage bonds, due 1932, amounting to $261,967, was paid July 1. These bonds were in a position somewhat different from any of the other bonds, being a lien against the property sold under contract to the city of Detroit. The contract requires interest on the 4½ per cent bonds to be paid. All other interest remains unpaid and the several bond issues above mentioned are in default.

Further improvement of the financial condition of the properties is expected, according to the receivers, despite the fact that large stockholders failed to take receivers' certificates totaling $1,660,000 authorized by the court. After foreclosure proceedings have been begun, some method of financing (probably an issue of receivers' certificates of different nature) will be worked out.

Successor Company to South Shore Takes Charge

Samuel Insull and associates on July 15 assumed complete charge of the operation of the Chicago, South Shore & South Bend Railroad. At a meeting of the board of directors of the recently incorporated company organized to buy the property of the South Shore line at public auction, a complete reorganization was effected and control of the railroad passed from the former bondholders to the Midland Utilities Company, of which Mr. Insull is president.

The Midland Utilities Company and the former bondholders are jointly interested in the new railroad company, but Mr. Insull and his associates have a majority on the board of directors. The new directors are: Samuel Insull and Britton I. Budd, Chicago; Charles W. Chase and Thomas G. Hamilton, Gary, Ind.; Morse DellPlain and B. P. Shearon, Hammond, Ind.; A. R. Horr and Charles Currie, Cleveland, Ohio, and James W. Noel, Indianapolis.

After the reorganization of the board of directors the following officers were elected: Chairman, Samuel Insull; president, Britton I. Budd; vice-presidents, Samuel Insull, Jr., B. J. Fallon, and Charles E. Thompson; vice-president and general manager, Charles W. Chase; assistant general manager, Thomas G. Hamilton; treasurer, George D. Mitchell; secretary, W. D. Boone; comptroller, W. A. Sauer; auditor and assistant treasurer, F. Pantel; assistant treasurer, B. P. Shearon, and assistant secretary, W. S. Gorman.

Operation of the railroad by the new management will begin at once. Announcement was made at the close of the meeting that an extensive rehabilitation program, which will include re-electrification of the railroad from Kensington to South Bend, will be announced very soon.

Negotiations for purchase of control of the South Shore Line by the Midland Utilities Company began early this year. A proposed plan for the reorganization of the company and sale of its property was submitted to bondholders by a first lien holders' committee in Cleveland on Feb. 4. Later, Charles Currie, president of the railroad, was appointed receiver, and on June 29 the property was sold at a public sale conducted at Gary by direction of the United States District Court. The Chicago, South Shore & South Bend Railroad, which had been incorporated early in June for the purpose of acquiring the property, was the only bidder and the railroad was sold for $6,000,000.

Samuel Insull, Jr., vice-president of the Midland Utilities Company, said:

> The interest of the Midland Utilities Company in the South Shore Line is an outgrowth of the company's enthusiasm for the territory known as "The Workshop of America" extending across northwestern Indiana. Gas and electricity are supplied to all of the territory around the lower end of Lake Michigan, except Gary, by the Northern Indiana Gas & Electric Company and the Calumet Gas & Electric Company, which are controlled by Midland Utilities Company. The former company also supplies gas in South Bend.
>
> Our consequent knowledge of the possibilities of development and demands for service in this, the coming steel center of America, and the most active manufacturing territory in the Middle West, has led us to enter business which is not primarily ours, that of transportation.
>
> We feel that as an improved railroad service will aid in the development of the territory, our operating subsidiaries furnishing gas and electricity will indirectly benefit by our activities in the transportation field.
>
> We believe, also, that a first-class, comfortable passenger service and a rapid overnight freight service in this territory will be financially successful. We are, therefore, going ahead to put the road in shape to furnish these two classes of service, in such a way as to place them above competition.

Abandonment of Line Likely.—With a falling off in revenues from $126,000 in 1920 to approximately $92,000 in 1925 for the first six months of this year, the Menominee & Marinette Light & Traction Company contemplates the suspension of service on its Stephenson Avenue line in Menominee, Mich. Buses may be substituted.

Won't Cut Tax Valuations.—The Indiana Board of Tax Commissioners has denied appeals of three Indiana traction companies for a reduction in the taxation valuation fixed at a hearing earlier in the year. Companies heard by the board at the second hearing and the original valuations were: Union Traction Company, $4,719,686; Indianapolis, Newcastle & Eastern Traction Company, $514,157, and the Muncie & Portland Traction Company, $272,140. Members of the board explained that at the first hearing this year valuations were cut to nearly one-half of the 1924 valuations.

Temporary Abandonment Allowed.—The Washington Railway & Electric Company, Washington, D. C., has been authorized to abandon the operation of the loop from Fourteenth and East Capitol Streets to the Eastern High School and return during the school vacation period only. Operation of this line is to be resumed on Sept. 21, 1925.

Bill Considered on Increasing Stock.—The Georgia Legislature is considering at the opening of its first biennial session a bill offered by Senator R. O. Perkins, Columbus, providing that an electric railway or suburban line may increase its capital stock by a vote of two-thirds of the capital stock entitled by the terms of the charter to vote. Under the present Georgia law the capital stock of an electric railway can be increased only by a two-thirds vote of all the capital stock, regardless of which stock is outlined as voting stock in the charter of the company, and this, according to Senator Perkins, not only creates confusion but is unfair to the company as well.

Earnings Not Sufficient for Tax.—Operations of the Cincinnati Traction Company, Cincinnati, Ohio, for June show that the earnings were sufficient to meet all of the requirements with the exception of the franchise tax of $29,301 to the city of Cincinnati and to the city of Norwood. After paying all other requirements there is left a balance of $3,351 to apply to these city franchise taxes, leaving a deficit of $25,987. W. Kesley Schoepf, president of the company, said that while the franchise tax for the second quarter has not been fully earned, it would nevertheless be paid, thus making it unnecessary to give notice of an increase in fare.

Personal Items

New Richmond Officers

Statement of New Personnel of Virginia Railway & Power Under Stone & Webster

Luke C. Bradley, who has been made president of the Virginia Railway & Power Company, Richmond, Va., as noted in the ELECTRIC RAILWAY JOURNAL for July 11, was formally elected to that post at a meeting for the reorganization of that corporation held on June 30. He succeeds Thomas S. Wheelwright, who, it was said, will resume the presidency of the Old Dominion Iron & Steel Company, his office before joining the traction corporation.

L. C. Bradley

W. E. Wood, former general manager of the Houston Electric Company, Houston, Tex., and with the Stone & Webster organization for sixteen years, was elected vice-president and will be in general charge of the operations of the company. The headquarters of Mr. Wood will be in Richmond.

J. F. McLaughlin was named vice-president in charge of new business, with headquarters in Norfolk. Mr. McLaughlin was general manager of the Baton Rouge Electric Company, Baton Rouge, La., and has been associated with Stone & Webster interests for fifteen years.

Fritz Sitterding, former vice-president, was succeeded in the office by Mr. Wood. G. B. Williams will remain as treasurer of the company, and A. H. Herrmann continues as secretary and assistant to the president. Mr. McLaughlin succeeded G. B. Williams as vice-president.

By-laws of the corporation were amended to increase the membership of the directorate from fifteen to seventeen, and the following personnel was elected:

H. H. Hunt, Boston, chairman of the board, succeeding Frank Jay Gould.

Bayard F. Pope of Blodgett & Company, New York, suceeding Nathaniel A. Campbell of New York.

Murray W. Dodge of the Chase Securities Corporation, New York, succeeding George H. Taylor, New York.

Luke C. Bradley, president, succeeding Walter B. Walker, New York, as director.

Henry R. Hayes of Stone & Webster, New York, succeeding W. J. Parrish, Richmond.

Ray Morris of Brown Brothers & Company, New York, succeeding F. Sitterding as director.

Edwin S. Webster, Boston, succeeding Coleman Wortham, Richmond.

George N. Lindsay of Blair & Company, New York, succeeding John C. Easley, Richmond.

William E. Wood, vice-president, now of Richmond.

Charles A. Stone, New York.

The former board of directors resigned in entirety, but the new management declined to accept the resignations of the following, and they will continue in the directorate:

Thomas S. Wheelwright, Richmond.
E. Randolph Williams, Richmond.
Herbert W. Jackson, Richmond.
John T. Wilson, Richmond.
Walter M. Wells, Trenton, N. J.
Hugh C. Davis, Norfolk.

T. Justin Moore has succeeded E. Randolph Williams as general counsel for the company. Mr. Williams will continue as a director, and has been elected as advisory counsel.

In a statement which he made Mr. Bradley said:

One of the most delightful things in connection with my assuming the duties of president of the Virginia Railway & Power Company is the splendid personnel of the organization. Mr. Wheelwright has gathered around him a fine body of men, and we are looking forward with the greatest pleasure to our association with them. Mr. Wheelwright has built up a clean, high-class organization in every respect and has thereby established the reputation that leaves its impression permanently.

W. E. Wood

In retiring from the presidency Mr. Wheelwright made the following statement:

I am highly gratified that Stone & Webster, Inc., and associates succeeded in the acquisition of Frank Jay Gould's holding in Virginia. The success they have achieved throughout the country establishes beyond question their character as real builders and the people of Virginia are to be congratulated that this organization is now so thoroughly identified with the upbuilding of the state.

Luke C. Bradley, my successor as president, speaks our language, having been born across the line in Tennessee, and will, I predict, soon become a valuable addition to and an important factor in the business life of the communities served by the Virginia Railway & Power Company.

I shall continue to be identified with the company as a director.

Charles M. Mock Resigns from Chicago Rapid Transit Company

Charles M. Mock, chief engineer of the Chicago Rapid Transit Company, Chicago, Ill., resigned on July 7. Because of his wife's poor health he is to move to California.

Mr. Mock had been with the company and its predecessors for 28 years. He was graduated from the engineering department of Purdue University. In 1897, when the Northwestern Elevated Railroad was being built, Mr. Mock was employed as assistant engineer on design and construction. Shortly after operation was begun on the new line he was made chief engineer on the Northwestern and Lake Street Elevated Railroads. In 1906 and 1907 Mr. Mock was in charge of the design and construction of the Ravenswood branch of the Northwestern, and following the completion of that branch he was put in charge of the mechanical and transportation departments of the Northwestern and Lake Street systems in addition to his other duties as assistant general manager of the two systems.

C. M. Mock

It was in 1911 that Mr. Mock was made chief engineer of the entire elevated system in Chicago. That was the year of the consolidation of the companies. This position he held until the present time.

Later he had charge of the track elevation of the North Side division of the Rapid Transit Company from Wislon Avenue to Evanston. During the past few years of his service with the company, however, he has had charge of other engineering details.

Officials and department managers of the company tendered Mr. Mock a farewell dinner on July 1. Several of those present had been associated with him since the start of his service with the company. Among those who spoke at the dinner were E. C. Noe, vice-

president; W. V. Griffin, secretary and treasurer, both of whom had worked with Mr. Mock for more than a quarter of a century; Bernard J. Fallon, vice-president in charge of operation; T. B. MacRae, auditor; Arthur U. Gerber, assistant chief engineer; James Walker and Luke Grant. Britton I. Budd, president, presented a handsome wrist watch to Mr. Mock on behalf of those present.

J. A. Dewhurst with "Journal"

Day & Zimmermann Executive Becomes Associate Editor, Located at New York

John A. Dewhurst has joined the editorial staff of the ELECTRIC RAILWAY JOURNAL as associate editor. Since 1920 Mr. Dewhurst has been on the staff of the management department of Day & Zimmermann, Philadelphia, Pa., as railway engineer, in which capacity he had charge of the study and negotiations pertaining to the railway engineering problems on the properties under the management of that firm.

J. A. Dewhurst

During the last five years Mr. Dewhurst has assisted in determining matters of policy and management that were continually arising, has handled a number of cases before the Public Service Commissions of Ohio, Pennsylvania and Virginia, has helped to direct the engineering pertaining to maintenance work and has also been actively identified with the design of six different types of light-weight cars for use on the properties under Day & Zimmermann management. Before that for two years he was engaged in carrying out report and valuation work for the same firm.

This work of itself has been rich in experience, for the Day & Zimmermann railways run the entire range of operation, to say nothing of the light and power properties under the supervision of the firm. After all, the medium-sized properties outnumber by far the large roads, and the problems that the medium-sized companies have recently been called upon to meet have been in many ways more difficult to solve than have those of the larger roads. It is in rendering just this kind of service that Day & Zimmermann have played a most important part, with men like Mr. Dewhurst achieving results that have properly reflected great credit on the firm itself.

Mr. Dewhurst was born in Chicago, but was reared in Seattle, Wash. There he attended the University of Washington and was graduated from the College of Electrical Engineering with the degree of B. S. in E. E. Immediately after he was graduated Mr. Dewhurst went to Schenectady and was employed in the testing department of the General Electric Company for about a year and a quarter. Following that he entered the railway engineering department and engaged in the work of making reports and engineering propositions on both city and interurban electric railways and on steam road electrification until August, 1915.

At that time he went to the Twin City Rapid Transit Company, where, after a month as motorman on the cars and two or three more months in traffic work, he was made superintendent of the schedule and traffic department. There Mr. Dewhurst remained until August, 1918, when he entered the service of Day & Zimmermann.

Mr. Dewhurst has been an occasional contributor to the ELECTRIC RAILWAY JOURNAL. He has been active in association work and at the present time is a member of the American Electric Railway Association and the American Institute of Electrical Engineers.

J. F. Jackson Resigns as Boston Elevated Trustee

James F. Jackson resigned on July 16 as chairman of the board of trustees of the Boston Elevated Railway, Boston, Mass. In tendering his resignation to Governor Fuller he stated that by his action "there are no public issues immediately at hand which would be affected."

Mr. Jackson has been a prominent figure in Massachusetts for many years. Some time after his graduation from the law school of the Boston University he served as city solicitor of Fall River, and was elected Mayor of that city in 1888 and 1889. From 1899 to 1908 he was chairman of the Massachusetts Railroad Commission, predecessor of the Massachusetts Public Service Commission. In that capacity he performed many distinguished and constructive acts of service. After he retired from the commission he engaged in private law practice in Boston and in 1919 was appointed trustee of the Boston Elevated Railway to fill the vacancy caused by the resignation of W. M. Butler.

In commenting on his resignation the Boston *Transcript* says that the public utility has lost the services of one of the ablest and most experienced men whom the people were accustomed to call to serve them in an executive capacity. It refers to Mr. Jackson's announcement two years ago of his desire to retire and says: "It can hardly be gainsaid that his present action is due to the summary treatment of the trustees by the Governor in his statement threatening them with discharge if they 'permitted' a strike of the carmen over the issue whether a change in the method of selecting arbitrators is arbitrable."

G. E. Tebbetts Engineer of Structures in Chicago

George E. Tebbetts was appointed engineer of structures of the Chicago Rapid Transit Company on July 1, to fill partially the vacancy caused by the resignation of Charles M. Mock, chief engineer. Mr. Tebbetts went to the Chicago company from the Chesapeake & Ohio Railroad at Richmond, Va., where he held the position of superintendent of bridges and buildings.

He has spent more than 25 years in construction work, including eight years as bridge engineer on the $50,000,000 Kansas City terminal. Graduating from the University of Illinois in 1899, Mr. Tebbetts began with the Chicago Junction Railroad. The following year he was placed in charge of field work for the United Gas Improvement Company, Newark, N. J.

G. E. Tebbetts

In 1903 and 1904 he was engaged in plant and blast furnace work with the New Jersey Zinc Company, taking the job of draughtsman in the latter year with the Chicago, Burlington & Quincy Railroad and working with the company until 1910. He resigned in that year as office engineer to take the position with the Kansas City Terminal Company.

During the war Mr. Tebbetts was assistant to the manager of the wood ship division of the United States Fleet Corporation. Following the war he acted as structural engineer with Stone & Webster and for the past year and a half with the Chesapeake & Ohio.

A. H. Ferrandou in Bus Field

A. H. Ferrandou, for the last six years executive assistant of the Washington Railway & Electric Company, Washington, D. C., recently resigned to become manager of motor coach sales for Graham Brothers in Detroit, Mich., a division of Dodge Brothers, Inc.

Mr. Ferrandou's connection with the electric railway industry dates back some fifteen years. Upon graduating from Tulane University with the degree of bachelor of engineering, he joined the engineering department of the New Orleans Railway & Light Company. After several years with that company he went to Springfield, Mo., where he was engaged in special work for the Springfield Traction Company. Later

he was transferred to New York as statistician of the Federal Light & Traction Company, of which the Springfield company is a subsidiary.

In 1913 he became connected with the United Gas & Electric Engineering Corporation as engineer in its rate and statistical department. There he remained until shortly after the outbreak of war in 1917, when he was commissioned in the ordnance department of the United States Army and served until the end of hostilities in 1918.

Upon being relieved of duty he became executive assistant of the Washington Railway & Electric Company. This position he held until he resigned to enter the service of Graham Brothers.

Mr. Ferrandou has been prominent in association activities. He has served on many of the committees of the Transportation and Traffic Association and is chairman of this year's committee on bus operation.

Obituary

W. E. Dowdell

William E. Dowdell, superintendent of the Portsmouth Electric Railway, Portsmouth, N. H., a subsidiary of the Boston & Maine Railroad, and superintendent of the bus service of the Boston & Maine Transportation Company at Portsmouth, died on June 5.

Mr. Dowdell was born in Gloucester, Mass., on Oct. 1, 1867. At nineteen, he was skipper of a coasting vessel out of his home port.

In 1889 Mr. Dowdell went with the old Lowell, Lawrence & Haverhill Street Railway as driver. When electrification came he took a position in the carhouse and a short time later became foreman of maintenance and repairs of the Lawrence area. In 1896 he was assigned to the Haverhill district. This led to his connection with the Boston & Maine Railroad in October, 1899, as foreman of maintenance and repairs at Portsmouth. For fourteen years he discharged these duties and then succeeded Frank P. Fosgate as superintendent, holding that position from November, 1913, until the service was discontinued last May. He was then chosen superintendent to start the bus service to succeed the railway.

W. R. Mason, one of the pioneers in the electric railway supply business, and during the past two years in the sales department of the Dearborn Chemical Company, operating out of the New York office, died recently. He became associated with the Sprague Electric Equipment Company at Chicago in 1890, later forming the Electric Merchandise Company, which took over the supply business of the Sprague companies. Mr. Mason was also identified with the automobile truck industry and during the early development of it was connected with the White Company, Packard and Mack International Companies. Mr. Mason was born in Bridgeport, Conn., in 1851.

James W. Lilly, one of the leading business men of Indianapolis and a director of the Terre Haute, Indianapolis & Eastern Traction Company, died recently. He was 62 years old.

Manufactures and the Markets

News of and for Manufacturers—Market and Trade Conditions
A Department Open to Railways and Manufacturers
for Discussion of Manufacturing and Sales Matters

84,448 Square Feet of Space Assigned at Atlantic City

When the exhibit committee of the American Electric Railway Association met on July 1 it had 172 applications for the exhibition at Atlantic City next October totaling 98,283 sq.ft. The committee assigned 84,448 sq.ft. Arrangements are being made to accomodate outside the Pier other exhibitors to whom the committee was unable to award space.

In notifying exhibitors of the assignment of space the association is pointing out that under contractual obligations at Atlantic City advance payments for space are required of the association. On this account the association urges that payments for space be made not later than Aug. 15, in order to insure possession of the space tentatively awarded to the intending exhibitor.

Market Surveys from Key Cities

The Department of Commerce has decided to institute "market surveys" in eight additional cities during the current year. This is part of an elaborate plan to create a permanent organization to compile current, monthly, commercial reports in "key cities" throughout the nation. Efforts are being made to induce civic organizations to pay the expenses for one year of a director of the work reporting to the department from the city, the squad of directors to be placed on the department's payroll at the end of that time if appropriations permit. It is understood that the plan has already been accepted in three cities. Incidentally, the first of the "market surveys," from Philadelphia, will be published within the month.

Manufacturers Say Car Building Is Not a Carrier Function

Seventeen corporations operating plants for the rebuilding of freight cars have filed with the Interstate Commerce Commission a protest against the commission's "encouragement" of manufacturing by railroads. They charge that because a railroad can monopolize its own work, a situation results which tends to eliminate competition and discourage economy. The accounts prescribed by the commission and kept by the carriers, they hold, do not show the true costs of manufacturing and make it impossible for the commission or the railroads to determine what such work really costs.

A specific request is made for a revision of the carriers' accounting system to a basis which "will show true costs for these operations." If the carriers build excess shops for car repairing and construction, the petition contends, these shops are not likely to be permitted to stand idle and they will bar the placing of the work at any outside shop even though it may be equipped to handle the work more economically.

Personnel of Motor Merger Announced

The new company into which the General Motors Corporation and the Yellow Cab Manufacturing Company will merge their interests in the manufacture of motor coaches, trucks and cabs will take the place of the Yellow Cab Manufacturing Company, Yellow Coach Manufacturing Company, Yellow Sleeve Valve Engine Works and the motor truck division of the General Motors Corporation. The full corporate title of the new company will be the Yellow Truck & Coach Manufacturing Company. Neither the Coach Operating Company nor the Yellow Cab Company, Chicago, which is an operating company, is to be affected by the merger. As indicated previously, John A. Ritchie, chairman of the board of the Fifth Avenue Coach Company, also president of the Chicago Motor Coach Company and of the Omnibus Corporation, will be president of the new company and John A. Hertz will be chairman of the board. Since the publication of the story "Motor Merger Details" in the ELECTRIC RAILWAY JOURNAL for July 11, page 76, additional officers have been announced as follows:

Vice-president in charge of engineering—George A. Green (formerly chief engineer of the Fifth Avenue Coach Company).

Vice-president in charge of production—Paul H. Geyser.

Vice-president in charge of finance and accounting—Irving B. Babcock.

Vice-president in charge of sales—P. L. Emmerson.

Vice-president and manager motor truck division—Otto E. Stoll.

The policies of the Yellow Cab Manufacturing Company will remain unchanged. The personnel and management of the company will remain the same, excepting for some minor changes in positions which will naturally result from the merger.

The operation and manufacturing organization of the General Motors Corporation truck division will remain practically in its entirety. This will be headed by Otto E. Stoll, who will become vice-president and a director of the new company. He will be manager of the Pontiac truck plant and the Detroit engine plant.

This combination of the cab, motor coach and truck manufacturing interests of the two companies will result, according to a statement by Mr. Hertz, in economy in the purchasing of raw

materials and the production of vehicles and will benefit not only the security holders but the purchasers of vehicles, and through them the public. Mr. Hertz said:

Our contact with the organizations of the General Motors Company has convinced all of us that the Yellow Truck & Coach Manufacturing Company is going to derive benefit in many ways. This holds particularly true of the assistance we will receive through the world-wide selling organizations, research departments and the general advice and assistance received from a strong organization of officers, manufacturers and financiers.

Consulting Service on Spring Troubles

Brill service is available in the consideration of all problems involving the use of springs. This the company is emphasizing to the trade through W. L. Smith of the supply department. This company, which has been designing and building electric car trucks for more than thirty-eight years and has specialized on springs for its trucks that will give a maximum of life at a minimum maintainance cost, wants to be permitted to diagnose the case and prescribe for it where spring troubles arise. It has no desire, however, to quote on springs for the sake of trying to outbid others. The spring manufacturer has his place, to be sure, but the Brill Company feels that as the duty of an electric truck designer or manufacturer is to study—to know just what kind of springs the truck requires—just what kind of heat treatment to give the springs, it is in a position to render an unusual service. As an earnest of manifestation of its desire to be of help in this connection the company has sent out a circular letter asking railways to write it telling about their spring troubles so that its engineers may analyze contributing factors and prescribe remedies for them.

General Electric Business Up 4 per Cent for Six Months

Gerard Swope, president of the General Electric Company, announces on July 12 that orders received by that company in the three months ended June 30 totaled $66,468,992, against $71,219,984 for the 1924 period, a decrease of 7 per cent. For the first six months of 1925, orders booked totaled $150,315,228, as compared with $144,707,887 for the first half of 1924, an increase of 4 per cent.

The Outlook at Washington on Coal

The report on consumers' stocks issued during the week ended July 11 by the U. S. Geological Survey in a general way shows how users of coal are prepared to meet a suspension. It shows that consumers of bituminous coal evidently are not nervous over the prospect of any interference with distribution. Their stocks are down to normal for this season of the year. It shows that the great stocks, laid in in anticipation of a possible strike in 1924, now have been liquidated. Thus an influence which depressed the market for more than a year has been removed. The report makes it very clear that the consumers are not in a position to forego new supplies for any considerable period, which is likely to prompt heavy buying the minute consumers take seriously the threatened suspension in the union field.

ELECTRIC RAILWAY MATERIAL PRICES—JULY 15, 1925

Metals—New York

Copper, electrolytic, cents per lb.	14.275
Lead, cents per lb.	8 05
Nickel, cents per lb.	34 00
Zinc, cents per lb.	7.53
Tin, Straits, cents per lb.	58 00
Aluminum, 98 to 99 per cent, cents per lb.	27 00
Babbitt metal, warehouse, cents per lb.:	
Fair grade	60.00
Commercial	28.00

Bituminous Coal

Smokeless mine run, f.o.b. vessel, Hampton Roads	$4.275
Somerset mine run, Boston	1.875
Pittsburgh mine run, Pittsburgh	1.95
Franklin, Ill., screenings, Chicago	2.00
Central, Ill., screenings, Chicago	1.775
Kansas screenings, Kansas City	2.50

Track Materials—Pittsburgh

Standard steel rails, gross ton	$43.00
Railroad spikes, drive, Pittsburgh base, cents per lb.	2 95
Tie plates (flat type), cents per lb.	2 375
Angle bars cents per lb.	2.75
Rail bolts and nuts, Pittsburgh base, cents, lb.	4 075
Steel bars, cents per lb.	2 00
Ties, white oak, Chicago, 6 in. x 8 in. x 8½ ft.	$1.50

Hardware—Pittsburgh

Wire nails, base per keg	2.65
Sheet iron (28 gage), cents per lb.	3 10
Sheet iron, galvanized (28 gage), cents per lb.	4.15
Galvanized barbed wire, cents per lb.	3 35
Galvanized wire, ordinary, cents per lb.	2.50

Waste—New York

Waste, wool, cents per lb.	16
Waste, cotton (100 lb. bale), cents per lb.:	
White	13–17
Colored	10–15

Paints, Putty and Glass—New York

Linseed oil (5 bbl. lots), per gal.	$1.06
White lead in oil (100 lb. keg), cents per lb.	0.1575
Turpentine (bbl. lots), per gal.	0.99
Car window glass, (single strength), first three brackets, A quality, discount*	84.0%
Car window glass, (single strength), first three brackets, B quality, discount*	86.0%
Car window glass, (double strength) all sizes, A quality, discount*	85.0%
Putty, 100 lb. tins, cents per lb.	4–6

* Prices f.o.b. works, boxing charges extra.

Wire—New York

Copper wire base, cents per lb.	16.00
Rubber-covered wire, No. 14, per 1,000 ft.	$6.75
Weatherproof wire base, cents per lb.	18.25

Paving Materials

Paving stone, granite, 4x8x4, f.o.b. Chicago, dressed, per sq.yd.	....
Common, per sq.yd.	....
Wood block paving 3½, 16 lb. treatment, N. Y., per sq.yd.	$2.86
Paving brick 3½x8½x4, N. Y., per 1,000 in carload lots	51.00
Paving brick 3½x8½x3 N.Y., per 1000 in carload lots	45.00
Crushed stone, ¾-in., carload lots, N. Y., per cu.yd.	2.075
Cement, Chicago consumers' net prices, without bags	2.075
Gravel, ¾-in., cu.yd., f.o.b. N. Y.	2 075
Sand, cu.yd., N. Y.	2.075

Old Metals—New York and Chicago

Heavy copper, cents per lb.	11.50
Light copper, cents per lb.	9.50
Heavy brass, cents per lb.	7.25
Zinc, old scrap, cents per lb.	4.50
Lead, cents per lb. (heavy)	6.75
Steel car axles, Chicago, net ton	$16.75
Cast iron car wheels, Chicago, gross ton	17.25
Rails (short), Chicago, gross ton	18.25
Rails, (relaying), Chicago, gross ton	25.50
Machine turnings, Chicago, gross ton	9.25

Cummings Car & Coach Company Formed

Announcement is made of the organization of the Cummings Car & Coach Company, successor to the McGuire-Cummings Manufacturing Company, with offices at Chicago and plant at Paris, Ill.

This change in name involves no fundamental financing, and is primarily a simplification of the company's corporate structure to correspond with the basis on which it has been controlled for several years. The new name is also more descriptive of the company's new products, which, in addition to the previous line of electric railway cars, trucks, snow sweepers and equipment, will also include the manufacture of single-deck gasoline buses and single and double-deck gas-electric vehicles. Specifications on these buses will probably be announced soon.

In addition to this expansion in products the new company will undertake an intensive sales expansion program designed to stimulate the replacement of obsolete electric railway equipment with modern cars, designed primarily with a view to merchandising electric railway transportation. The development of buses is designed to offer electric railways a complete transportation vehicle service to meet the requirements of all phases of a co-ordinated system.

C. H. Minor President International General Electric

Clark H. Minor, vice-president of the International General Electric Company, has been elected president. Mr. Minor succeeds Anson W. Burchard, who resigned but retained his position as chairman of the board.

Mr. Minor has recently returned from a four months trip in Europe. He says business of the company is good, with orders for the first half running substantially in excess of the corresponding period last year. The improvement in business has been general in scope and is reflected by inquiries from practically all the European countries.

Big Bus Business Being Done by Mack

Sales of Mack buses for the first half of 1925 increased 433 per cent, as compared with sales during the first six months of 1924, and were 34 per cent more than the total sales for the entire year of 1924. Bus sales of the month just passed were 39.9 per cent ahead of May business, and to date July promises to show further substantial gains over previous months. More buses were sold during the first half of June than during the entire month of May. When January figures were published early in February, officials of the company pointed out that business for that month had established a bus sales record for any one month in the history of the company. Since January every month has continued to show substantial gains.

Rolling Stock

Scranton Railway, Scranton, Pa., expects to order ten new cars in the near future.

Union Traction Company of Indiana, Anderson, Ind., through Arthur W. Brady, receiver, has been authorized by the Madison Circuit Court to buy fifteen steel interurban cars at a cost of $407,000. The cars were contracted for with the St. Louis Car Company prior to the receivership proceedings. Reference was made to these cars in the ELECTRIC RAILWAY JOURNAL, issue of July 11, 1925, page 77. The specifications were published in the Aug. 23, 1924, issue, page 302.

Hartford & Springfield Street Railway, Warehouse Point, Conn., is in the market for six buses of 25-passenger size. Purchase of these buses by Aug. 1 is planned.

Track and Line

Pacific Electric Railway, Los Angeles, Cal., will extend the Seventh Street line to Recreation Park, Long Beach. The cost of the extension will be $137,000.

United Electric Railways, Providence, R. I., has received permission from the Public Utilities Commission to extend and relocate its track on Silver Spring Street, Union Avenue, Dorrance and Westminster Streets, all in Providence. The extension of the Whitehall Street turnout to Webster Avenue will make practically a double track to that point. Superintendent Anderson said that the estimated cost was $29,602. The relocation of tracks on Silver Spring Street is made necessary by the enlargement of the Northrup Avenue yard by the New Haven Railroad. The cost there was said to be $12,775.

Birmingham Electric Company, Birmingham, Ala., on July 1 had completed the greater part of a paving construction program which will involve a total outlay of approximately $500,000. For the past year or more the city of Birmingham has had under way an extensive street paving program, and the railway has co-operated in this work. Paving work over several miles of the company route on First Avenue was completed early in the year at a total cost of nearly $300,000. The company also paved between its tracks on Avenue U, at Ensley, at a cost of $25,000. The paving completed on July 1 consisted of nine large projects.

Santa Barbara & Suburban Railway, Santa Barbara, Cal., will pave between the tracks and 2 ft. on either side along the Bath Street line. A temporary surface was placed along the tracks last fall, at which time the grade was lowered 12 in. The cost of this work was about $2,800. The cost of placing a permanent top dressing of asphalt will be about $3,100.

Williamsport Passenger Railway, Williamsport, Pa., will extend the line on West Fourth Street to Oliver Avenue, a distance of 1 mile, provided the property owners along the entire route will pay for the paving between the tracks and along the rails. This statement was made by L. W. Heath, manager of the Williamsport division of the Pennsylvania Power & Light Company, which owns the railway.

Power Houses, Shops and Buildings

Iowa Southern Utilities Company, Centerville, Iowa, has let a contract for the erection of a $200,000 substation at Burlington, Iowa, to J. F. Nebergall & Son of Davenport. The site is in the heart of the business district of Burlington. With dimensions of 112 ft. x 52 ft., of brick and concrete construction, the new plant will be modern in design and in construction. It is designed by the Federal Engineering Company of Davenport. Power will be fed from the station to the railway.

Indianapolis, Ind. — Plans have been approved for remodeling the brick building west of the Traction Terminal Station, Indianapolis, to be used as a terminal station for buses operated out of Indianapolis by the interurban electric railways. The building is 78 ft. wide and 193 ft. long. When remodeled it will have a lobby 13 ft. wide and 27 ft. long connecting the trainshed of the terminal station and the new bus station. Just off this lobby there will be a waiting room 39 ft. x 25 ft. A concrete floor on which the buses will operate inside the station is to be 191 ft. x 49 ft. It will have a capacity of 45 buses. It is planned to rebuild the entire front of the building. Buses will enter the building through an arched opening in the front. Quarters will be provided for drivers and mechanics.

Terre Haute, Indianapolis & Eastern Traction Company, Terre Haute, Ind., is receiving bids on the construction of a carhouse, including machine shop, paint shop, carpenter shop, locker rooms, dining room, kitchen, offices and storerooms at Terre Haute. The building will be 50 ft. wide and 250 ft. long. It will cost about $200,000.

Trade Notes

Eisemann Magneto Corporation, New York, N. Y., has announced that E. V. Wills, formerly assistant service manager of the Westinghouse automotive division, and more recently connected with Barter-Oppenheim, Newark, N. J., has entered its employ in the branch office at Chicago. He will act as service traveler in the Middle West.

Bridgeport Brass Company, Bridgeport, Conn., announces that L. W. Grout, formerly vice-president and sales manager of the Keating Valve Company, Springfield, Mass., for the past three years, has joined its sales organization to take charge of the sale of Bridgeport-Keating flush valves. Mr. Grout brings to his new position the advantages of many years of manufacturing and sales experience in the automotive and plumbing industries. He was of the firm of Grout Brothers Automobile Company, established in 1898. For a number of years he was connected with the sales forces of the Cadillac Company.

W. R. Bassick, president of the Commerce Motor Truck Company, Ypsilanti, Mich., announces the appointment of A. C. Hamilton as consulting engineer to supplement the regular Commerce engineering staff.

McClellan & Junkersfeld, Inc., engineers of New York, St. Louis and Washington, D.C., are now represented in Chicago by Stephen Gardner, as district manager, with offices at 203 South Dearborn Street. Mr. Gardner will continue also as president of the Industrial Engineering & Sales Service, Inc., Chicago.

General Electric Company, Schenectady, N. Y., has appointed Robert Miller manager of the Rocky Mountain sales district, with headquarters in Denver, succeeding Harry D. Randall. B. J. Wheatlake succeeds Mr. Miller as local office manager at Salt Lake City. Mr. Randall has been assigned to special duties at the general office in Schenectady.

North East Electric Company, Rochester, N. Y., announces that Ronald Clark sailed on the S.S. *Republic* July 15 for Paris, where he will resume his connections with the Société Anonyme Française North East, the French representative of the North East Electric Company. In preparation for his post in Paris Mr. Clark came to this country, where he has spent a number of months at the factory of the North East Electric Company.

New Advertising Literature

Condit Electrical Manufacturing Company, South Boston, Mass., has issued a pamphlet describing the Condit type N-4 motor switch.

Goodyear Tire & Rubber Company, Inc., Akron, Ohio, has issued a 32-page illustrated pamphlet containing the story of the rubber industry as viewed through the 25 years' experience of the Goodyear Tire & Rubber Company. This booklet answers inquiries about the rubber industry raised every day by business men, students of economics and others. Besides giving an account of the growth of Goodyear, the pamphlet has articles of the "Chemistry of Tire Building," "Why Tire Mileage Has Increased," "Rubber Goods for Farm and Factory" and "Goodyear in the Export Field."

Hisey-Wolf Machine Company, Cincinnati, Ohio, has issued bulletin No. 1306, describing the new "Hisey" heavy-duty grinder. It will be mailed on request to the manufacturer.

Spokane Concrete Pipe Company, Spokane, Wash., has issued a booklet on pole preservation. The pamphlet is illustrated and describes how busy poles, now butt-rotted but otherwise O.K., can have years of life added to them "by the ten-year tested Harding process without any interruption of service."

Austin Company, Cleveland, Ohio, has issued a pamphlet on "facts about the design and construction of motor bus terminals."